This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

COUNTWAY LIBRARY
HC 33BG J

Discarded

Presented by
DR. WILLIAM J. GIES
to enrich the library resources
available to holders
of the
GIES FELLOWSHIP
in Biological Chemistry

BOSTON MEDICAL
JUN 30 1964
LIBRARY
t.4328

IDENTIFICATION
OF
THE COMMERCIAL DYESTUFFS

BEING

Vol. III

OF

A METHOD
FOR
THE IDENTIFICATION OF PURE ORGANIC COMPOUNDS

BY A SYSTEMATIC ANALYTICAL PROCEDURE BASED ON PHYSICAL PROPERTIES AND CHEMICAL REACTIONS

CONTAINING CLASSIFIED ORIGINAL DESCRIPTIONS OF
NEARLY 1700 SYNTHETIC AND NATURAL DYESTUFFS
REFERENCES TO MANY ALLIED BRANDS
SUGGESTIONS ON THE EXAMINATION
OF DYESTUFFS IN MIXTURES AND
A COLOR STANDARD

BY
SAMUEL PARSONS MULLIKEN, Ph. D.
*Assistant Professor of Organic Chemical Research at the Massachusetts Institute of Technology,
Boston, Mass.*

FIRST EDITION
FIRST THOUSAND

NEW YORK
JOHN WILEY & SONS
London: CHAPMAN & HALL, Limited
1910

Copyright, 1910,
BY
SAMUEL PARSONS MULLIKEN

Entered at Stationers' Hall, London
All rights reserved.

Stanhope Press
F. H. GILSON COMPANY
BOSTON, U.S.A

PREFACE.

A special volume on the identification of commercial dyestuffs formed no part of the writer's original plan for his "Method for the Identification of Pure Organic Compounds." Its publication was first conceived when it became apparent that successful analytical tables for the dyestuffs could only be prepared from original descriptions of properties and reactions made expressly for such use, and that most of the experimental material required for an investigation on the scale involved could only be procured in the form of commercial products. The better opportunity for a rational adaptation of tests and procedures to the circumstances under which they would be used afforded by a mode of publication that would bring the descriptions of a large body of industrially important substances within the covers of a single volume, instead of allowing their dispersion according to qualitative elementary composition through separated "orders," was also recognized as a practical argument having greater weight in this instance than would be conceded to it elsewhere. Other causes influential in shaping the scope and character of this volume are reserved for statement in the sketch of the development of systematic methods for dyestuff identification forming its introductory chapter.

At the completion of this portion of the "Method," it again becomes the writer's privilege to express his grateful acknowledgments to friends who have contributed to the result. Among these are his former students, Messrs. W. Burns, J. B. L. Orme, J. H. Link, C. N. Draper, W. B. Gonder, J. S. Coye, R. E. Drake, J. A. Kydd, J. McGowan Jr., L. G. Beers, R. E. Blankenbuehler, W. C. Kerr, and H. P. Trevithick, by whom, beginning in 1905, numerous indispensable preliminary studies of methods and procedures were made as thesis investigations. The greater part of the data in the analytical tables is due to the painstaking experiments of the writer's former assistant, Mr. U. Tsukakoshi, and much of their verification to the equally careful work of Mr. H. P. Ireland. Among those whose kindly criticism or coöperation has been helpful on many occasions, the names of Professor L. N. Olney of the Lowell Textile School, Professor F. H. Thorp of the Massachusetts Institute of Technology, and Mr. W. D. Livermore, chief chemist of the American Woolen Company, demand special mention. The uniformly courteous and satisfactory response of all the great color companies to calls made on them through their American representatives for samples and reasonable information, and the renewed permission of the Milton Bradley Company of Springfield, Mass., to make use of their excellent color standard with an increased number of colors, are further instances of practical coöperation which are recalled with pleasure and appreciation.

Finally, in answer to numerous inquiries, and at the suggestion of his patient publishers, the writer once more hazards the information that the issue of Volume II of this "Method," devoted to the identification of organic compounds of nitrogen not provided for in the present volume, is still held in prospect at a date which must await future announcement.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, April, 1910.

CONTENTS.

PAGES

PREFACE iii

CHAPTER I.

INTRODUCTORY (HISTORICAL SKETCH OF THE DEVELOPMENT OF GENERAL METHODS FOR DYESTUFF IDENTIFICATION) 1–7

Difficulties of the Analytical Problem; Types of Methods proposed; the Chemical Methods of Witt, Weingaertner, Green, and Rota; the Spectroscopic Method of Formánek; the Method of Comparative Dyeing; other Aids for the Analyst; Deficiencies of the Existing Procedures and Suggestions for Improvements; Plan and Scope of the Present Volume.

CHAPTER II.

DIRECTIONS FOR THE GENERAL ANALYTICAL PROCEDURE IN THE EXAMINATION OF AN UNKNOWN DYESTUFF 8–31

The Numbered Tests—their Object and Arrangement. 8–9.

A.—The Preliminary Tests.—(1*) Homogeneity Tests; (2) General Appearance and Color; (3) Solubilities and Colors of Solutions in Water, Alcohol, and Sulphuric Acid; (4) Test for Sulphur Dyestuffs; (5) Direct Dyeing of Wool and Cotton; (6) Dyeing with Hydrosulphite Vat; (7) Dyeing with Sodium Sulphide Vat. 9–16.

B.—The Generic, Divisional and Sectional Tests.—(8) Discharge of Direct Wool Dyeings by Rongalite C; (9) Color Returns on Wool by Air; (10) Color Returns on Wool by Potassium Persulphate; (11) Color Discharges and Returns on Vat-dyed Cotton; (12) Determination of Division and Section. 17–20.

C.—The Coördination Tests.—(13) Action of Sulphuric Acid on Textile Dyeings; (14) Action of Sodium Hydroxide on Textile Dyeings; (15) Action of Nitrous Acid on Wool Dyeings; (16) Afterchroming Wool Dyeings; (17) Fluorescence. 20–22.

D.—Special Tests.—(18) Precipitation Tests with Sulphuric Acid, the Sulphates of Calcium, Chromium and Copper, and Tannin; (19) Dyeings on Mordanted Wool; (20) Diazotization and Development with β-Naphthol; (21) Reduction Products of Azo Dyestuffs; (22) Absorption Spectra; (23) Verification Tests; (24) Use of the Color Standard. 23–31.

CHAPTER III.

USE OF THE ANALYTICAL TABLES 32–37

Classification and Terminology.—Genera; Divisions; Sections; Coördinated Sequences; Serial Numbers; Trade and Constitutional Names; Allied Brands; Dyeing Methods.

Examples illustrating the Analytical Procedure. 34–35.

List of Abbreviations used in the Analytical Tables. 35–37.

ANALYTICAL TABLES.

GENUS I.—*Azines, Oxazines, Thiazines, Indigoes, etc.* 38–61

Division A (Coloring Cotton); Division B, Subdivisions 1 and 2 (the Second Subdivision containing Hydrosulphite Vat Colors.

* The numerals in parentheses refer to test numbers — not pages.

PAGES
GENUS II.—*Triphenylmethane Derivatives, etc*. 62–89
Divisions A and B (the Species of Division A coloring Cotton).
GENUS III.—*Azo Compounds, etc*. 90–191
Divisions A and B (the Species of Division A coloring Cotton).
GENUS IV.—*Pyronine, Oxyketone, Thiobenzenyl and Indanthrene Derivatives, Natural Coloring Matters, etc*. 192–233
Division A (Coloring Cotton): Division B, Subdivisions 1 and 2 (the Second Subdivision containing Hydrosulphite Vat Colors).
GENUS V.—*Sulphur Dyestuffs*. 234–249
Divisions A and B. (Cotton Dyeings of Division B not being "discharged" by Rongalite C.)

CHAPTER IV.

IDENTIFICATION OF DYESTUFFS IN MIXTURES. 250–258
Numbered Procedures for Mixtures—their Scope and Arrangement. 250.
Examination of Mixed Dyestuffs (41).—General Directions; (a) Fractional Solution; (b) Fractional Dyeing and Stripping [(b′) for Basic Colors, (b″) for Acid Colors]; (c) Separations by Immiscible Solvents. 250–254.
Preliminary Examination of Textile Dyeings (42).—(a, b, c) Extractions: (d) Testing for Mordants; (e) Testing for Sulphur Colors; (f) Color Discharges. 254.
Identification of Dyestuffs on Textiles (43).—Procedures for:—(a, b, c) Direct Dyeings; (d′) Dyeings on Tannin Mordants; (d″) Dyeings on Metallic Mordants; (e) Developed Colors. 255–256.
Identification of Dyestuffs in Foods (44).—Comment on Standard Procedures. 256–258.

ALPHABETICAL INDEX TO THE DYESTUFFS DESCRIBED IN THE ANALYTICAL TABLES. 259–274
COLOR STANDARD (SHEETS C, D, AND E). . . . . In cover pocket

THE
IDENTIFICATION OF COMMERCIAL DYESTUFFS.

CHAPTER I.
INTRODUCTORY.

HISTORICAL SKETCH OF THE DEVELOPMENT OF GENERAL METHODS FOR THE IDENTIFICATION OF DYESTUFFS.

The latest edition of Metz's Year Book for Colorists and Dyers contains a list of 4300 brands of coal-tar dyestuffs said to find application in the United States. Assuming this unofficial census to be approximately accurate, and further admitting that two-thirds of these colors may well be mixtures, that half of those which are essentially homogeneous are listed more than once under different trade names, and that of the residue only half are of more than the slightest commercial interest, several hundred definite chemical species still remain which are liable to be met with at any time in colored industrial products of recent manufacture in this country. It is evidently of much economic importance to the general manufacturer and consuming public, and to the true interest of the honest color maker and dealer, that convenient and reliable analytical methods should be found for the identification of all these dyestuff species.

A general solution for this problem, in which the gradation in properties in the passage from species to species is so subtle, and the terminology so kaleidoscopic and often intentionally confusing, offers peculiar difficulties. These can only be overcome by the aid of a very comprehensive and systematic procedure based on classified descriptions in which the differential characteristics have in every case been determined by direct experiment, and in which the distinction between suspected and established identity of alleged equivalent brands is everywhere sharply drawn. And even then, in periods like the present, when genuine new species appear on the market in such rapid succession, it is inevitable that the analyst must at the best be resigned to advance slightly in the rear of the march of invention.

Thus far three types of analytical procedure capable of comprehensive application have been outlined. The first gives special prominence to simple chemical tests and color reactions; the second, to the absorption spectra of solutions; while the third, which is known and is available only in a few large textile dyeing establishments, depends chiefly on comparative match dyeing. These methods overlap one another more or less. Their development is due to the labors of a small group of investigators and is worthy of brief recital.

The first attempt to provide a method for the identification of the modern dyestuffs comprehensive enough in scope to demand special notice, was made by Otto N. Witt, the originator of the chromophore theory. Witt's list of colors, which he describes as " comprising most of the dyestuffs which are now or have recently been upon the market, with the exception of anthracene derivatives," contained considerably less than one hundred brands, and their tabulated descriptions published in

Die Chemische Industrie in January, 1886, covered only four pages. In this short and unpretentious paper the dyestuffs are classified according to color, fluorescence, solubility, basic or acid character, the color changes that they experience upon treatment with acids and alkalies and upon reduction with zinc dust followed by exposure to atmospheric oxygen, behavior of solutions toward precipitants like acids, alkalies and metallic salts, absorption spectra (in a few instances), and comparative dyeing tests. The tables are prefaced by directions for the recognition of mixed dyes by the now familiar powder sprinkling and fractional dyeing tests, and by methods for the identification of the common dyestuff diluents. It is interesting to note that none of the later analytical schemes employ important methods which are not more or less distinctly foreshadowed in this early publication of Witt.

In February, 1887, Eduard Weingaertner published in the *Chemiker Zeitung* (*Coethen*) " A Method for the Examination of Commercial Dyestuffs " based upon Witt's, but extended to include the anthracene colors. Weingaertner's procedure marks an advance in the sharper delimitation of dyestuff groups, which is made possible by the application of experimentally clearly defined chemical group tests, among which that with tannin to distinguish between soluble basic and acid dyes, and the zinc dust reduction, followed by air oxidation of leuco products susceptible to such change, are given the greatest prominence.

It is, however, to the persistent efforts of the English color chemist, A. G. Green, that we chiefly owe the comparatively secure foundation for a scientific and adequate system of qualitative analysis of dyestuffs with differences in chemical behavior due to variations in chromophoric structure as its corner stone. The laying of this foundation necessitated, especially, refinements and development in the earlier reduction and oxidation tests. In his modified Weingaertner scheme, published in the Journal of the Society of Dyers and Colorists in 1893, Green still adhered to zinc dust as the reducing agent, but obtained an additional distinction between colors which are easily or difficultly restored from their leuco derivatives by employing dilute chromic acid as a second and more powerful oxidant after air. He thus enabled the drawing of much sharper lines of division between colors of the azine, triphenylmethane and azo types. By substituting colorless hydrosulphite solutions for zinc dust, colorless sodium persulphate for chromic acid, applying the reduction and oxidation tests to dyed wool instead of to dye solutions, and making numerous changes in the subordinate tests and manner of classification, Green, assisted by H. Yeoman and J. R. Jones, in papers published in the Journal of the Society of Dyers and Colorists on " The Identification of Dyestuffs on Animal and Vegetable Fibers " (1905, p. 236, and 1907, p. 252), was enabled to present a radically revised scheme much superior in effectiveness to any that had been before arranged.

Between the dates of Green's earlier and later papers, A. G. Rota proposed in the *Chemiker Zeitung* (1898, p. 437) " A Method for the Identification of the Organic Dyestuffs," in which the fundamental divisions of the classification were based on chromophoric differences determined by the use of stannous and ferric chlorides as the reducing and oxidizing agents. This procedure possessed interesting and suggestive features, but was evidently not elaborated with the expectation that it would afford anything more than a means of approximate orientation. Moreover, in practice, its chief divisional tests are so stated as to lead to erroneous conclusions in an inconveniently large proportion of cases.

That the spectroscope may render important aid in the identification of dyestuffs has long been recognized. The favorable attention of chemists was especially called to the possibilities of the spectroscopic method by H. W. Vogel in his "Praktische Spektralanalyse irdischer Stoffe," whose second edition was published in 1889. Vogel's work resulted in the collection of a considerable body of charted absorption spectra of dyestuff solutions in various solvents before and after the addition of reagents, in which the form and positions of the dark absorption bands as they appear when viewed through a spectroscope of low dispersive power are shown. Vogel's data have often given welcome aid in special cases of preliminary and confirmatory testing, but the method of observation and plotting chosen does not express quantitative differences with the degree of precision that would be necessary for the foundation of a general system of spectroscopic analysis.

The work of redetermining these data, supplementing them, and more fully utilizing the results, has recently been undertaken by the Bohemian chemist, J. Formánek. Formánek's "Spektralanalytischer Nachweis künstlicher organischen Farbstoffe," published in 1900, contains a regular spectro-analytical procedure for the identification of 367 dyestuff species, exclusive of a considerable number of synonymous brands. The list is claimed to contain practically all coal-tar dyes on the German and Austrian markets at the time of its preparation, with the exception of blacks, sulphur colors, and some of the mordant dyestuffs. The species are arranged: first, in four groups (green, blue, red, and yellow) according to the colors of the aqueous solutions; second, in subgroups according to the number and relative positions of the darker and lighter absorption bands in the respective spectra; and, thirdly, in a sequence according to the increasing numerical values, expressed in wave length units, of the points of maximum light absorption in the darker primary bands (Hauptbände). The diagnostic value of the measurements is increased by the fact that they are made with solutions in three solvents before and after the addition of reagents. The approximate colors of the solutions examined are also tabulated. Later, Formánek has published in his "Qualitative Spektralanalyse anorganischer und organischer Körper" (second edition, 1905) corresponding spectroscopic data for all the more common vegetable colors; and is at present just republishing his entire method for the identification of the dyestuffs in an improved form, with the coöperation of E. Grandmougin, under the title "Untersuchung und Nachweis organischer Farbstoffe auf spektroscopischem Wege."

The textile coloring industry, which is the greatest consumer of dyestuffs, has thus far in practice almost ignored the spectroscope and made only a very restricted use of systematic methods of identification for colors based primarily on chemical tests. The preference has usually been given to comparative dyeing tests, followed by observation of a few of the color changes which the dye solutions or dyed fibres show upon treatment with acids, alkalies, etc., which so often have been made the subject of tabulation in dyers' manuals. In the hands of a person who has had an extended practical experience with the use of colors, and who has at command a classified collection of the dyes and dyed textiles sufficiently extensive to cover the field in which his work lies, such a procedure may in many cases yield the information desired. For all others, of course, it is an absolutely barred road.

The general *modus operandi* of this comparative dyeing method as it may be developed in an exceptionally favorable environment may be illustrated by a brief sketch of the form in which it has been very successfully applied for several years in one of the largest of the American dyeing establishments for woolen and union goods. Every dye coming into the mill for trial is at once dyed simultaneously in the same bath upon small skeins of wool, cotton, and silk. The dyeings are made both in neutral and in acid baths. The concentrations of the dye baths in dyestuff, Glauber's salt, or Glauber's salt and acid, and also the rate of heating, are made identical for all experiments, and the dyeings are continued until the baths are as completely exhausted as possible. A part of each skein is then afterchromed by a uniform method. The several skeins representing each dye are mounted together on a large card, suitably inscribed, and permanently preserved in a filing cabinet, in which each dye finds its position in close proximity with others of similar tinctorial properties determined by an ingeniously indexed classification depending on color differences. Perfect agreement in all the constants of color between the dyeings obtained from an unknown dyestuff and those found upon the skeins of a filing card in such a system argues strongly for their actual identity, especially if it be further demonstrated that the dyed fibres show the same behavior in a few of the well-known "spotting tests" with chemical reagents. The greatest practical inducement to the dyer for submitting to the trouble and expense of establishing such a classified filing system is, however, found in the use which he may make of it as an authoritative and permanent comparative record of the dyeing properties and intrinsic cash values of dyestuffs between which he may at any time have to make a choice.

In the examination of dyestuffs none but a superficial analyst will proceed far in his experiments without experiencing the need of fuller information concerning the properties, composition, and origin of individual dyestuffs than can be supplied by any analytical treatise of moderate dimensions. A large proportion of the original literature in this field is in the form of patent specifications; and as it is customary not to refer to a dyestuff in these specifications by its trade names, the important information which they contain would be quite inaccessible to the chemist without the aid of some reliable intermediary. That the difficult task of collating these data in a condensed digest for the purpose of general reference has been accomplished with a considerable degree of success is due chiefly to the initiative of Gustav Schultz and P. Julius. Their "Tabellarische Uebersicht der im Handel befindlichen künstlichen organischen Farbstoffe" (translated into English by A. G. Green with the title, "A Systematic Survey of the Organic Coloring Matters") has already passed through four editions and is to be found in every color laboratory. It was first published in installments in 1887 in *Die Chemische Industrie.* The fourth edition, published in 1902, contains the trade names, and, in so far as they are known, the scientific names and structural formulæ, for 681 dyestuff types with the bibliography of their original literature, including the patent specifications, and brief mention of some of their properties, reactions and uses.

The most detailed and exhaustive compilation relating to the composition, properties, manufacture, uses, and literature of the coal-tar colors is, however, K. Heumann's "Die Anilinfarben und ihre Fabrikation." The part thus far completed contains about eight thousand pages, and covers the dyestuffs of the triphenylmethane nitro, nitroso, and azo groups. The first volume was issued in 1888. After Heumann's death the second and third volumes were published under the editorship of P. Friedlaender. The fourth volume, on the azo colors, completed in 1906, was compiled by G. Schultz.

Another useful work of reference for analysts who are unprovided with an extensive collection of original sample dyeings, is Adolph Lehne's "Tabellarische Uebersicht über die organischen Farbstoffe und ihre Anwendung in Farberei und Zeugdruck mit Ausfarbungen jedes einzelnen Farbstoffes und Zeugdruckmustern." This book, which was first published in 1893, and has been continued by supplements, contains mounted sample dyeings of the dyestuffs tabulated in Schultz and Julius' work, and exact directions for the dyeing process by which each was obtained.

Finally, as comprehensive compilations of the patent specifications relating to the dyestuffs accompanied by critical comment, mention should be made of P. Friedlaender's "Fortschritte der Theerfarbenfabrikation und verwandten Industriezwiege" (seven volumes, 1877–1905), and Adolf Winther's "Organische Farbstoffe" (1908), forming the second volume of his "Zusammenstellung der Patente auf dem Gebiete der organischen Chemie."

The present procedure for dyestuff identification is published as Volume III of "A Method for the Identification of Pure Organic Compounds" of all classes, of which only Volume I, treating of the more important compounds of carbon with hydrogen, and with hydrogen and oxygen, has as yet been issued. After a preliminary study of various possible methods of analytical subdivision for the great group of the organic compounds containing nitrogen, it became clear that if the dyestuffs were to be adequately provided for, practical considerations would necessitate their segregation, regardless of elementary composition, in a separate class and volume; and that their coördination in subgroups and orderly sequences within their respective genera would have to be effected by the use of a different type of tests than had been adopted in other parts of the completed work. But, before entering this field at all, it was decided that the efficiency of existing schemes should be critically examined, and if any sufficiently meeting practical requirements were found, that the treatment of the dyestuffs should be abandoned as unnecessary. After a protracted experimental study of these proposed methods and systems, in which the final criterion for efficiency was the proportion of dyes in a long representative list which it was found could be traced to their assigned positions in each classification by a person who had acquired reasonable facility in the technique of the method by preliminary practice, the conclusion was reached that all existing procedures are unsatisfactory guides, and that only radical reconstructive measures can be expected to materially improve the situation. Some of the most serious of the defects thus discovered for which palliatives or remedies appear attainable and will be proposed, may now be indicated.

In systems of analytical subdivision based on chemical tests and physical properties, one of the most fruitful causes of confusion and error is the practice of not carrying the subdivision far enough. Instead of being guided by successive differentiating tests to detailed characterizations of individual dyestuffs grouped in an order calculated to facilitate the comparison of final similarities and differences, one usually finds the procedure terminate with the information that the unknown dyestuff may belong in one of several groups, each of which may contain a number of species whose scattered descriptions in the reference literature, when at length located, prove tantalizingly lacking in the kind of exact information that would alone be effective at this stage of the inquiry. The only valid excuse for not continuing the process of subdivision until the species is reached should be the lack of suitable means for proceeding farther by the use of data readily at command. The cause which has on the whole been most potent in prematurely halting the process of subdivision, is not the absence of notable differences between individual species, but the practical difficulty in clearly defining them. With the dyestuffs, most differentiating tests involve the observation of subjective color phenomena and the comparison of the results with verbal descriptions given by an authority. But as the authority and the analyst have heretofore possessed no common standard for the verbal definition of the color sensations concerned other than that given by independent personal interpretations of the crude popular terminology, continued division by such tests soon became unprofitable, owing to the inevitable blurring and distortion of all the finer chromatic distinctions during their passage through the printed word.

Another serious defect characteristic of the systems of subdivision by chemical tests, is the failure to recognize the fact that it is impossible to devise single reactions that will serve to bring into the same genus all dyestuff species which it would appear from their chemical structure and chromophoric similarity should be treated as congeners. It is not feasible to meet this difficulty by loading down the directions for each divisional test with a specification of all the numerous exceptions. Unless the exact result of every divisional test is recorded as a part of the specific characterization of each dyestuff, so as to indicate the direction and degree of any abnormalities in its behavior, mistakes attributable to the overlapping of generic characteristics will remain unnecessarily frequent.

The chief weaknesses found in the spectroscopic method as developed by Formánek are the too frequent oversight by most observers of some of the weaker secondary absorption bands whose recognition is necessary as a guide to the proper section of the tables; the difficulty in correctly locating true absorption maxima for broad bands; and the unavoidable absence of numerical data for solutions exhibiting only one-sided absorption. A keen observer making daily measurements gradually learns to minimize the experimental difficulties, but the skill thus acquired does not long survive an interruption in the regular practice.

It is believed that the difficulties pointed out in the preceding paragraphs have been in large measure overcome or avoided in the present procedure: first, by the adoption of a definite standard for all color comparisons; second, by the device of the "*compound chromatic sequence,*" which enables an orderly arrangement in close proximity of all very similar dyestuff descriptions without giving dangerous overemphasis to uncertain minor differences, which is scarcely to be avoided when such species are widely separated in consequence of a too persistent subdivision by simple dichotomy; third, by lessening the occasion for mistakes due to the overlapping of genera and divisions by the explicit statement of the exact results of all divisional tests as a part of the specific description of each dyestuff; and, fourth, by placing the spectroscopic and match dyeing tests in a position after the mandatory part of the procedure, where lack of special knowledge and skill in the technique of the methods will cause least inconvenience.

With such a plan there was, of course, no alternative but to base all descriptions of properties and reactions on original data; and as the number of differential and specific characteristics requiring determination reached a sum total high in the thousands — all generic, subgeneric, and sequential tests having to be performed in duplicate — judicious frugality in the use of the means of characterization became an enforced virtue. Dyestuffs of which specimens could not be procured for direct examination could not be described in the tables. Synonymous designations for described species are, however, freely introduced on right-hand pages under the heading " Alleged identical or allied brands," to indicate that the claim for relationship rests entirely on the authority of others. Several hundred original spectroscopic data from measurements made in the author's laboratory have been given a place among the confirmatory tests, but with the expectation that the spectroscopist will find it highly advantageous to habitually consult Formánek's works for additional information whenever a characterization in the tables is found insufficient to enable certain identification.

In collecting material for this volume it was the desire to include analytical descriptions of one or more representatives of each of the pure dyestuff types in use in the United States in the spring of 1909, or mentioned in the fourth edition of the tables of Schultz and Julius, in as far as they could be procured without too great difficulty. As even the purer and more concentrated dyestuffs of commerce are seldom pure compounds in the strict chemical sense, but usually contain, besides traces of accidental impurities, neutral diluents, and often minute quantities of foreign colors added for purposes of standardization, it was found necessary in the selection of samples, in order not to omit many important types altogether, to interpret the results of the homogeneity tests in a very liberal spirit. Pronounced mixtures, with the exception of blacks and sulphur colors, have, however, usually been excluded. The specimens studied were generally in original packages bearing the labels of the manufacturers, or their authorized agents. When a departure from this rule has occurred, the fact has been made evident in the descriptions by the insertion of the name of a general dealer in place of that of a manufacturer.

The uniform practice adopted in preparation of the tables of inserting all significant original data, regardless of possible inconsistencies, will do much to aid in detecting errors in description arising from the possible use in certain cases of impure specimens or faulty observations. It is the earnest request of the writer that such errors, wherever noted, as well as any inadvertent omissions of valuable dyestuffs, shall be brought to his attention for early correction.

CHAPTER II.

DIRECTIONS FOR THE GENERAL ANALYTICAL PROCEDURE IN THE EXAMINATION OF AN UNKNOWN DYESTUFF.

The purpose of this chapter is: to provide detailed working directions for performing all the tests required in the identification of an unknown dyestuff by the regular procedure of this method; to prescribe how the results of these tests shall be interpreted; and to indicate the sequence in which they should be applied.

The tests of this chapter are *numbered tests.* That is, each is preceded by an Arabic numeral which is used to represent it in all cross references. The working directions for the tests, and the rules by which their results are to be interpreted, are given prominence by being printed in a larger type than the comment on involved principles, exceptions, and limitations, which frequently follows. The supplementary "*observations*," after having been once read, will require attention only in cases of special difficulty. It is not superfluous to emphasize the importance of following the working directions closely. The tests are doubtless susceptible of improvement in many particulars; but the positions of the dyestuffs in the classification of the tables were determined by their application in the precise form stated, and experience has demonstrated that attention to apparently minor details in their performance is sometimes of determining importance.

To effect any single identification, the use of all the numbered tests is not necessary. Hence, in the interest of economy in time and material, and as a guide to a suitable selection and proper sequence in their application, these tests have been arranged in four groups, each of which — " A," " B," " C," " D" — is introduced by paragraphs printed in conspicuous black-faced type, indicating the procedure to be followed in each special case, and serving as a general key to the use of the " Method." The data called for by the key paragraphs having been secured, the analyst should be in possession of all the facts required to locate his dyestuff in the tables if it is a described species. The subjoined index to the numbered tests affords a view of how they are distributed among the groups of " A. — Preliminary," " B. — Generic, Divisional, and Sectional," " C. — Coördination," and " D. — Special," Tests.*

A.

PRELIMINARY TESTS.

Test 1. Homogeneity tests. (p. 9.)
" 2. General appearance. (p. 11.)
" 3. Solubilities, colors, and fluorescence of solutions in water, alcohol, sodium hydroxide, and concentrated sulphuric acid. (p. 12.)
" 4. Test for sulphur-dyestuffs and sulphites. (p. 13.)
" 5. Direct dyeing of wool and cotton. (p. 14.)
" 6. Hydrosulphite vat-dyeing of cotton and wool. (p. 15.)
" 7. Sodium sulphide vat-dyeing of cotton and wool. (p. 16.)

*** Definitions for the terms *genus, division, section, coördination sequence,* etc., will be found at the beginning of Chapter III, which treats of the terminology, arrangement, and use of the analytical tables. The terminology of color is, however, explained in the " Observations " under Test 24.**

B.

GENERIC, DIVISIONAL, AND SECTIONAL TESTS.

Test 8. Color discharge effect of Rongalite *C* solution on wool dyed in Test 5. (p. 17.)
" 9. Return by air oxidation of color discharged in Test 8. (p. 18.)
" 10. Return by potassium persulphate oxidation of color discharged in Test 8. (p. 18.)
" 11. Color discharge (by Rongalite *C*) and return (by air) on cotton vat-dyeings obtained in Tests 6 or 7. (p. 19.)
" 12. Rules determining the *division* and *section* of a genus in which the tabulated description of a dyestuff should be sought. (p. 19.)

C.

COÖRDINATION TESTS.

Test 13. Effect of concentrated sulphuric acid on the color of dyed wool or cotton. (p. 21.)
" 14. Effect of 10 per cent sodium hydroxide solution on the color of dyed wool. (p. 21.)
" 15. Effect of nitrous acid on the color of wool dyed in Test 5. (p. 21.)
" 16. Effect of an afterchroming treatment on the color of wool dyed in Test 5. (p. 22.)
" 17. Fluorescence of an alcoholic solution. (As a coördination test applied only to dyestuffs of the VR Section of Div. A, Genus II. (p. 22.)

D.

SPECIAL TESTS.

Test 18. Precipitations from aqueous solutions with: (a) sulphuric acid; (b) sodium hydroxide, or the sulphate of calcium, chromium or copper; (c) tannin. (p. 23.)
" 19. Color of dyeings on chrome or alumina mordanted wool. (p. 24.)
" 20. Colors of diazotized and developed dyeings. (p. 24.)
" 21. Determination of the reduction products of azo dyestuffs. (p. 25.)
" 22. The absorption spectra of dyestuff solutions. (p. 27.)
" 23. Verification of conclusions by comparative testing. (p. 29.)
" 24. Use of the color standard. (p. 29.)

A.

PRELIMINARY TESTS.

Whenever the material to be examined is a free dyestuff, apply Tests: 1 (for Homogeneity); 2 (for Appearance); 3 (for Solubilities and Colors of Solutions); 4 (for Sulphur Colors and Sulphites); 5 (Direct Dyeing of Wool and Cotton); and 6 and 7 (Dyeing Vat and Sulphur Colors) when circumstances mentioned in the opening paragraphs of these tests render it necessary.

If the material is a colored mixture or dyed textile, consult Chapter IV for methods for the isolation of the coloring matter and the further procedure.

TEST I.

HOMOGENEITY TESTS.

(a) **By Scattering the Powdered Dyestuff upon Water.** — Place about ten milligrams of the dry color powder on the point of a penknife held some inches above and slightly to one side of a water or a prepared wetted surface. Blow obliquely and sharply downward on the powder, so as to scatter it uniformly over the prepared area. For water soluble dyestuffs this surface may be a small sheet of filter paper saturated with water and resting on a horizontal glass plate. Substitute alcohol for water, if the dye is not soluble in the latter solvent. If preferred, instead of using wetted paper, blow the powder upon the surface of the solvent in a deep beaker standing on white paper, or contained in a white porcelain dish or casserole. Note whether the colored spots that dot the wetted paper, or the colored streaks that form in the colorless solvent as the dissolving particles settle through it, all exhibit the same color.

If numerous spots or streaks of two or more colors are seen, the color is a mixed dyestuff, and to insure a successful outcome for the examination, it must in general be first resolved into its component colors by the methods of Chapter IV — unless it be a sulphur color, or a black or gray, in which case it may be found described in the tables like a simple dyestuff.

(b) **Scattering the Powdered Dyestuff upon Sulphuric Acid.** — If part (a) of this test does not prove the dyestuff to be a mixture, repeat it by blowing some of the powder upon a thin layer of concentrated sulphuric acid in a white porcelain dish. Interpret the result as in (a).

Observations. — While the foregoing tests will not show the compound nature of a mixed dyestuff whose particles are very finely ground and thoroughly mixed, the methods for compounding mixed colors used by manufacturers very rarely bring about such a perfect blending of components as to prevent their detection by this treatment, provided the particles of different kinds do not dissolve with hues that are too similar. When the test with water fails because of the similarity of the hues of the resulting solutions, it is not at all unlikely that the sulphuric acid test may be entirely successful, the colors of the same dyestuffs in the concentrated acid often showing a striking divergence.

Mixtures in solution, and solid mixtures that are too intimately blended to be recognized as such by the scattering tests, may usually be successfully examined by one or more of the procedures which follow under (c), (d), and (e).

(c) **By Fractional Dyeing.** — Dye successively in a bath of moderate concentration short pieces of white yarn, removing each piece as soon as the color — which should not be too deep — is of a tone favorable for convenient matching. Continue this operation until the bath becomes too much exhausted to dye more yarn readily. Various textile fibres and dyeing methods may be employed in this test. In dealing with soluble colors it is usually most convenient to first try a neutral bath containing about one part of the color to from one to ten thousand parts of water. 15 cc. of this solution is placed in a test tube and heated by standing in a small porcelain dyepot or beaker containing water and heated by a gas flame. The most convenient yarn is white " Saxony " knitting worsted. This may be added to the bath in three inch lengths.

If the dyestuff is not a mixture, the colors of the several dyeings should be alike in hue and should show the same changes when subjected to chemical treatments, as for instance when acted upon by sulphuric acid or caustic alkali in Tests 13 and 14.

Observation. — The principle of this important method will be found discussed in Chapter IV in connection with the question of the separation of mixed dyestuffs.

(d) **By Capillary Absorption.** — Suspend a strip of filter paper 2 centimeters wide and 25 centimeters long from a horizontal glass rod supported by a clamp. Allow 3 to 5 centimeters of the paper at its lower end to dip into a tenth of a per cent aqueous or alcoholic solution of the dyestuff. Allow to stand for several hours in a small closet so as to prevent rapid evaporation and exclude dust. Observe whether the paper then shows along its length zones of different hues. Cut off and dry that part of the strip which is above the surface of the solution. Ascertain whether spotting the stained paper with reagents like sodium hydroxide or concentrated sulphuric acid will give similar or unlike hues in the different levels.

Pronounced hue differences, either before or after spotting with reagents, are evidence of lack of homogeneity.

Observations. — This test is not infrequently so delicate as to show admixtures so small that their presence exerts only a negligible influence on the outcome of the tests of the systematic identification procedure.

Our knowledge of this method is chiefly due to the investigations of Friedrich Goppelsroeder. For a bibliography and fuller details the reader may consult Goppelsroeder's "Neue Capillar- und Capillaranalytische Untersuchungen" and his "Anregung zum Studium der auf Capillaritäts- und Adsorptionserscheinungen beruhunden Capillaranalyse," published in Basel in 1907 and 1906. Each dye in solution tends to rise to a definite height in the filter paper, and there to concentrate under the influence of capillarity and adsorption in a zone of greater or less width. As a specific illustration, the behavior of the mixture of methylene blue and picric acid solutions may be cited from Goppelsroeder. Such a solution gave a blue zone at the bottom of the paper 3.05 centimeters wide; then a very pale yellowish zone of 9.75 centimeters; and, finally, a brilliant yellow zone 0.25 centimeters in width as the upper termination of the colored area.

(e) **By Spectroscopy.** — The experienced spectroscopist who is familiar with the usual arrangement and general appearance of the absorption bands characteristic of the various dyestuff groups will frequently be able to detect a mixture by a glance at the absorption spectrum of a solution of mixed colors. An observer without extended experience will, on the contrary, be unable to draw any reliable inferences from the number and positions of the bands. The application of the spectroscopic method is briefly discussed in Formánek's "Spektralanalytische Nachweis künstlicher organischer Farbstoffe," page 27.

TEST 2.

GENERAL APPEARANCE AND COLOR.

If the dyestuff is a powder, or consists of crystals, spread out a portion on a piece of white paper and make note of its visible physical characteristics. Attention should be directed to the condition of the particles (crystalline or amorphous), to their lustre, to evidences of the presence of diluents, and especially to the color as expressed in terms of the color standard. Powders should be flattened down with a spatula to give an even surface for the color comparison. Pastes are to be poured out on a white unglazed tile.

Observations. — The general appearance of a dyestuff is sometimes highly characteristic, but it is usually imprudent to attach great importance to the circumstance that the appearance of a commercial color *exactly* coincides, or fails to coincide, with its recorded description. Variations in the degree of subdivision, in the manner of drying, in the proportion of neutral diluent substances added in standardizing for the market, in the metallic element in combination with the acidic radical, or in the acid in combination with the basic radical, or in the number of molecules of water of crystallization present, may be causes sufficient to greatly change the general appearance of a dyestuff while they are without that effect on its chemical and tinctorial properties that would lead to its being regarded as a distinct species or brand.

TEST 3.

SOLUBILITIES, COLORS, AND FLUORESCENCE OF SOLUTIONS IN COLD WATER, ALCOHOL, AND CONCENTRATED SULPHURIC ACID.

(a). **In Water.** — Shake 20 milligrams of the finely powdered dyestuff with 20 cubic centimeters of distilled water in a test tube until it is entirely dissolved or a saturated solution obtained. Filter if the solution is not clear. Determine the exact hue and tone of the solution by comparing it with the color standard in the manner directed on page 30.

Dilute 3 cubic centimeters of this solution with successive small quantities of water until a color of a Tint 2 tone is reached. Note the exact hue when this point is reached, as well as the hue at that stage of the dilution when the tone is just *normal* and on the point of changing toward a Tint 1. Color observations will therefore be recorded at three different dilutions.

Reserve the 17 cubic centimeters of filtered solution which was not further diluted, for possible later employment in Tests 18 and 22.

(b). **In Alcohol.** — Proceed as directed under (a) except that half the quantities of dyestuff and solvent there specified will be sufficient for making the initial solution.

(c). **In Concentrated Sulphuric Acid.** — Shake about one milligram of the finely powdered dyestuff with about 10 cubic centimeters of pure sulphuric acid of specific gravity 1.84. Observe the exact color when at a *normal* tone, first diluting with more concentrated acid if the original color is too dark.

(d). **Fluorescence.** — In performing parts (a), (b), and (c) of this test, observe whether any of the solutions show fluorescence when held before a dull black background and viewed obliquely while being traversed by a beam of sunlight directed toward the dark surface. If the solution shows no distinct fluorescence at the concentrations mentioned above, gradually dilute it with successive additions of the solvent until the color almost disappears, and repeat the observation.

Observations on Test 3. — The solubilities given in the tables were all determined at the temperature of the laboratory unless a direct statement to the contrary appears. To make observations comparable with the data in the tables, it must be noted that the approximate scale of solubility peculiar to this volume embraces the following degrees: *Easily soluble*, "*e.s.*," when solution is complete. *Soluble*, "*s.*," when the solution is strongly colored, but usually meaning that there is, or may be, some undissolved colored residue. *Insoluble*, "*i.*," when enough dyestuff does not dissolve to color the solvent decidedly.

With many dyestuffs, but not with all, when their solutions are gradually diluted, the *hues* as well as the tones change to the right or to the left in the spectrum sequence to the extent of several chromatic units of the color standard. This fact is sometimes helpful in distinguishing between colors that are otherwise much alike, and it is on this account that the rather tedious procedure of making observations at several concentrations is recommended. In the tables, when the color is recorded as a *normal* tone at only a single concentration, the statement should be taken to refer to the highest dilution at which, with the solvent in question, a *normal* tone is observed.

The phenomenon of fluorescence is often more easily observed in very dilute than in concentrated, and in alcoholic than in aqueous, solutions. Care must be taken not to mistake for it the dichroic effect sometimes seen, when a concentrated dyestuff solution that exhibits different hues at different concentrations is shaken in a glass vessel so as to show two hues corresponding to the color of the solution in a thick and in a thin layer. Fluorescence is scarcely ever met with among the dyestuffs of Genus III; is rather unusual in Genus II; is of frequent occurrence in Genus I; and of considerable diagnostic value in

Genus IV as a means for distinguishing between the fluorescent colors of the pyronine and the nonfluorescent ones of the azo types.

For a somewhat full discussion of the influence of chemical constitution on fluorescence, the reader is referred to Formánek's and Grandmougin's "Untersuchung u. Nachweis organischer Farbstoffe auf specktroskopischem Wege," pp. 73–100.

TEST 4.

TEST FOR SULPHUR DYESTUFFS (AND SULPHITE COMPOUNDS).

Place 5 milligrams of the dyestuff in dry powder, or a quantity of a paste equivalent to this weight of dry substance, at the bottom of a dry six-inch test tube, and add 5 cubic centimeters of stannous chloride reagent.* Stretch a disc of filter paper 4 to 5 centimeters in diameter tightly over the mouth of the test tube by bending the edge of the paper sharply down over the glass lip. Let fall one large drop of neutral aqueous ten per cent lead acetate solution upon the middle of this paper cap. Heat the mixture rapidly, so as to bring it to boiling within 10 seconds. Then boil it very gently for 10 seconds longer. Remove the paper cap immediately, and carefully observe the appearance of its lower surface.

If the paper shows a black or deep brown stain covering most of its exposed surface, and the absence of sulphite compounds is proved by the nonappearance of sulphur dioxide when some of the dyestuff is warmed with dilute sulphuric acid, the dye may be assumed to be a sulphur color, and its description is to be eventually sought in Genus V.

Observations. — This test is one in which careful attention to the directions for performance and interpretation is of the utmost importance. Thiazine dyestuffs give faint brown rings, which usually extend only a short distance inward from the circumference toward the center of the paper cap. If, however, the length of the period of active boiling is increased from ten to thirty seconds, the coloration from a thiazine may equal that which is usually obtained in testing a sulphur color under normal test conditions. Violent boiling will cause the evolution of so much hot acid vapor as to decompose any lead sulphide on the filter paper with destruction of the dark ring. Thiobenzenyl dyestuffs give fainter colorations than thiazines, or none at all. Among the more than two hundred and fifty sulphur dyestuffs of the tables to which Test 4 has been applied, only seven gave stains so light that they could possibly be mistaken for thiazines. Thioindigo Red and a few other hydrosulphite vat colors of Genera I and IV which are not classified as sulphur colors give a positive reaction in the test.†

It is important to bear in mind that sulphurous acid, sulphites, thiosulphates, wool, albumin, and ultramarine, all give a strong positive reaction. No case has yet been observed by the writer in which even a faint coloration has been produced by the HSO_3 group of a pure sulphonated color, or by the SO_2 group of a sulphone; although Green (Jour. Soc. Dyers & Colorists, 1907, p. 253), who performs the test under slightly different conditions, states that "Many salt dyestuffs evolve hydric sulphide when boiled with stannous chloride, apparently through reduction of sulphonic groups."

In testing for sulphur colors in commercial dyeings on cotton, on account of the liability to error arising from the presence of sulphur compounds in finishing or thickening materials, in the bisulphite compounds of mordant colors, or in the "antichlor" applied after bleaching, it is always necessary to first remove these disturbing substances as completely as may be by a preliminary treatment. This is not always easy to accomplish in an entirely satisfactory manner. The method proposed by Green and Stevens (Jour. Soc. Dyers & Colorists, 1907, p. 118) — which consists in boiling the cloth for a minute or two in a ten per cent solution of caustic soda, and then, in the case of calico prints containing albumin, with dilute hydrochloric acid, and washing thoroughly — is said to be usually sufficient. One square inch of the cloth thus prepared, if substituted for the dyestuff powder in Test 4, should give a good positive reaction when the color is really a sulphur dyestuff.

---

* **Stannous Chloride Reagent.** — Dissolve 250 grams of crystallized stannous chloride in 195 cubic centimeters of hydrochloric acid (spec. grav., 1.20) by warming to about 75° C. and stirring. When a clear solution has been obtained, dilute with 185 cubic centimeters of distilled water.

† Among the newer hydrosulphite vat colors which were received too late for description in the tables of this edition, a large proportion give a positive reaction in this test.

TEST 5.

DIRECT DYEING OF WOOL AND COTTON.

If the dyestuff is in a dry condition and has not been shown to be a sulphite compound by Test 4, stir 0.3 of a gram, finely powdered, in 200 cc. of boiling distilled water contained in a beaker glass until all is dissolved, or until a saturated suspension results. If the dyestuff is a paste, increase the quantity used to from 1.5 to 3.0 grams according to its concentration, taking care that any solid matter that may remain undissolved in suspension shall be in a state of fine subdivision. If the dyestuff is a sulphite compound, mix with water at 50° C. instead of with boiling water.

Add about one-third of the hot color solution or suspension, prepared as above described, to 200 cc. of tepid or cold distilled water in a porcelain dyepot or glass beaker of 500 cc. capacity. Introduce into this bath 4 grams of all-wool Henrietta cloth * and a piece of bleached cotton sheeting having the same superficial dimensions, and each weighing three or four ounces to the square yard. Both fabrics must have been well wetted before immersion, and the cotton at least must have been thoroughly boiled out and rinsed with pure water to remove starch and other finishing materials. Raise the temperature of the bath gradually, heating with a low rose burner at such a rate that boiling shall begin at the end of 15 minutes. Work the cloth about in the dye liquor almost continuously, and watch the progress of the dyeing carefully, in order to be prepared to remove each textile at the time when the dyeing has reached the depth of color desired. This is a color which, after the prescribed washing, should approximate a normal tone of the color standard as closely as the conditions of the experiment permit, or, for very dull colors, a medium broken or gray tone. The dye bath is to be strengthened by additions from the reserved dye liquor, if it appears after the first few minutes that the dye is being too slowly absorbed. Continue the dyeing for a total period of 30 minutes *if necessary to secure the desired tone*, but never longer. In case of a thirty minute dyeing, the temperature during the last 15 minutes should be about 100° C., and the last of the reserved dye liquor should always be added to the bath not later than 20 minutes after the entering of the fabrics.

The dyeing having been completed, rinse the fabrics quickly with cold water and wring. Then enter in actively boiling water, and work the cloth about in it for exactly sixty seconds. Again rinse quickly with cold water, and wring and dry. Determine and record the hue and tone of the dried dyeings by comparing them with the color standard as described under Test 24. Preserve the cloth for subsequent tests.

Observations. — This test is not performed to ascertain the conditions most favorable for the application of the dyestuff to wool or cotton, nor what colors these fibres would assume when dyed in such a manner. The object of the test is solely to obtain in a simple way certain data and colored textile materials which are requisite for the successful continuance of the analytical procedure as it is here arranged. To substitute some special method of dyeing that would give a deeper, more level, or more brilliant coloring, and therefore be more satisfactory from the dyer's standpoint, would frequently suffice to destroy all chance of identification through use of the classified descriptions of the tables. Many direct colors, it is true, do give dyeings in this test that are almost identical in appearance with the corresponding commercial dyeings; but such coincidences are not analytically necessary, and are not to be assumed as a matter of course.

Dyeing is begun in a tepid bath in order to prevent colors which have a very strong affinity for the fibers from being absorbed too rapidly, and in consequence, unevenly. Soluble sodium bisulphite derivatives, too, dye much more evenly below 60° C.; because, at higher temperatures, they lose sulphur dioxide rapidly and deposit insoluble coloring matter. The dye liquor which is prepared is not all added to the dye bath at once, because some colors of high tinctorial power, like many of the deep basic blues of Genera I and II, often yield in a few minutes dyeings of tones too dark for purposes of exact comparison, slight differences in hue being much more difficult to distinguish in colors of the shade-tones and broken colors than in the normal colors, or in the tints.

---

* A name applied in the United States to a light-weight, pale, creamy white ladies' dress goods material.

The direct blacks in this test have received exceptional treatment, since they cannot be dyed to normal tones, and are in general mixed colors. The rule in this case is to dye very lightly. A dull tint, a light broken tone, or a light or medium gray, may thus be obtained. The *hue* of this light dull color, which it must be admitted is probably due chiefly to that particular component of the mixture that is at first absorbed most rapidly by the wool, becomes the determining factor in fixing the " Section " to which the black will be assigned for description.

The conditions set in regard to washing the cloths after dyeing, especially the cotton, are of vital importance. Doubling the time prescribed for treatment in the boiling water, or largely increasing the volume of wash water, would sometimes extract so much additional color from the cotton as to bring a dyestuff into the wrong " Division " of its Genus. (See Test 12.)

The quantities of the several materials recommended for use in this test are such as it is convenient to employ when the supply of the unknown dyestuff is unlimited. The difficulty of the work is not greatly increased when all the weights and volumes are divided by a quantity large enough to reduce the dyeing to a test tube experiment. A single milligram of dyestuff and a few inches of woolen and cotton yarn are often found to be more than enough for this test and all dependent experiments. The change from woven cloth to loosely spun yarn does, however, sometimes sensibly affect the rate at which a liquid reagent will penetrate the fibers and effect changes in the absorbed coloring matter.

TEST 6.

DYEING WITH HYDROSULPHITE VAT.

Perform this experiment with all colors known in advance to be hydrosulphite vat dyestuffs, and also with all others which, while nearly insoluble in water, alcohol, and two per cent aqueous sodium hydroxide, do not dye cotton in Test 5 *nor give a strong positive sulphur dyestuff reaction in Test* 4.

Mix 0.2 gram of a dry dyestuff powder, or 1.0 gram of a 20 per cent paste dyestuff, with 65 cc. of warm water in a very large test tube. Add 20 cc. of alkaline Blankit *T* * solution, and 18 cc. of a 10 per cent caustic soda solution. Heat quickly to 45° C. If after five minutes at this temperature the dyestuff does not appear to be dissolving, raise the temperature, and add 2 cc. more of the alkaline Blankit T solution. Continue to increase the temperature ten degrees at a time, and to make further 2 cc. additions of Blankit T solution at ten minute intervals until a nearly complete — though perhaps almost opaque — solution is obtained. Avoid the use of a higher temperature than is necessary to cause solution, and in no case exceed 90° C. Record the color of the solution, which is referred to in the tables as " Color of the hydrosulphite vat."

Dilute the solution with an equal volume of water at the same temperature, insert strips of well-washed and wetted cotton and woolen cloths of the kinds used in Tests 5. Remove the cloth after some minutes. Rinse sparingly with cold water containing a little alkaline Blankit solution. Wring. Develop the color by exposure to the air for from 15 to 30 minutes. Wash, first with very dilute acetic acid, and then with water; and, finally, dry. Record the exact colors of the dyeings, and preserve them for use in later tests.

---

* *Blankit T* is a concentrated preparation of sodium hydrosulphite manufactured by the Badische Anilin- und Sodafabrik and extensively used in vat dyeing. In the solid state, if well protected from moisture, it is very stable. The alkaline solution used in this test is made by dissolving 5 grams of the Blankit T in 100 cc. of water, and adding 2 cc. of 10 per cent sodium hydroxide solution. The solution oxidizes rapidly, and should not be used unless freshly prepared.

Observations. — Too high a temperature during the preparation of the solutions in this test is liable to cause decomposition and loss of dyestuff, but an excess of 10 or 15 Centigrade degrees will not necessarily prevent success in the identification. The color of the solution, which contains alkali soluble reduction products of the dyestuff proper, and is termed " the vat," varies from a pale yellow with the indigoes to an almost opaque blue-black with some of the indanthrenes, and is never the same as that of the dyestuff. As the vat absorbs oxygen readily from the air with regeneration of the insoluble dyestuff, the experiment is performed in a test tube rather than in a dyepot, in order to reduce the liquid surface exposed to the atmosphere. Fifteen or more minutes' immersion in the vat may be required to yield dyeings of normal tone on cotton; but one or two minutes is enough for wool. A longer immersion in the alkaline liquor in case of the wool will badly disintegrate it.

Although the dyestuffs described in the vat color subdivisions of Genera I and IV are used exclusively as vat colors, their commercial pastes, in spite of their insolubility in water, frequently leave the wool distinctly and not very unevenly colored after the treatments of Test 5. Dyestuffs showing this peculiarity receive an additional " mention " in the division of the tables where this behavior might lead to their being sought.

TEST 7.

DYEING WITH SODIUM SULPHIDE VAT.

Apply this test to such dyestuffs only as have been shown by Test 4 to be sulphur colors.

Dissolve 0.5 gram of the dyestuff in 200 cc. of a boiling sodium sulphide stock solution prepared according to the directions given in the footnote.* Dilute the clear solution with an equal volume of boiling water.

Enter in this bath, which is kept at the boiling point in a porcelain dyepot or beaker, 5 grams of cotton sheeting previously washed and wetted as in Test 5. Work the cloth in the bath until it shows a color slightly deeper than a normal tone (when such a depth is attainable) upon removal from the vat. Wring and expose to the air for a couple of minutes. Then rinse. Work in 200 cc. of boiling water for just one minute. Again rinse, and then dry.

Determine the hue and tone of the dried dyeing, and preserve it for later tests.

Observations. — The sulphur colors with few exceptions are insoluble or nearly insoluble in water. In the sodium sulphide vat they are changed to soluble reduction products, which may be colorless or colored, and are absorbed by the cotton fiber. On exposure to the air, oxygen is rapidly absorbed and the dyestuff developed in the fiber as in hydrosulphite vat dyeing.

The immersion of the cotton in the vat is never to be prolonged beyond thirty minutes. More than twenty minutes is seldom required, and five minutes is sometimes quite sufficient.

The dyeings are dull and uneven in comparison with those obtained from the same colors by the slower special commercial methods, which often include aftertreatments with dichromate, copper sulphate, hydrogen peroxide, etc.

As the final washing removes a good deal of loosely adhering color, the tone of the cloth before washing should be distinctly deeper than is desired for the finished product.

---

* **Stock Solution of Sodium Sulphide.** — Dissolve together in ten liters of water 50 grams of crystallized sodium sulphide; 125 grams of sodium chloride; and 25 grams of anhydrous sodium carbonate. In tightly stoppered bottles this solution may be preserved indefinitely without deterioration.

B.

GENERIC, DIVISIONAL, AND SECTIONAL TESTS.

Apply Tests 8, 9, and 10 (Rongalite Reduction of Direct Dyeings on Wool followed by Air or Persulphate Oxidation) to all dyestuffs not found to be sulphur or hydrosulphite colors by the Preliminary Tests.

Apply Test 11 (Rongalite Reduction of Cotton Vat Dyeings followed by Air Oxidation) to all sulphur or hydrosulphite vat colors.

Determine the *genus* of the dyestuff by aid of the following rules, in which the terms " *discharge* " and " *return* " must be interpreted in accordance with the definitions given under the " *observations* " accompanying the respective tests.

GENUS I comprises all colors which are discharged in Tests 8 or 11 and returned by air in Tests 9 or 11.

GENUS II comprises all colors discharged in Tests 8 and returned by potassium persulphate, but not by air, in Test 9.

GENUS III comprises all colors discharged in Test 8, but not returned by either air or potassium persulphate in Tests 9 and 10.

GENUS IV comprises all colors not discharged by the application of Test 8.

GENUS V comprises all colors giving the sulphur dyestuff reaction in Test 4.

Determine the *division* and *section* of the *genus* under which the description of a dyestuff is to be sought in the tables by aid of the rules given under Test 12.

TEST 8.

DISCHARGE OF DIRECT WOOL DYEINGS BY RONGALITE C.

Add 10 cc. of a five per cent aqueous solution of Rongalite C to a six-inch test tube containing one square inch of well-wetted woolen cloth dyed in Test 5. Bring to the boiling point as quickly as possible over a Bunsen flame. Boil gently until the color is entirely discharged or becomes creamy yellow, provided this does not require more than two minutes. At the end of two minutes, or sooner in case of an earlier discharge, after having quickly noted the color of the cloth and solution, remove the cloth, rinse with cold water, and wring.

If a discharge has been effected, the cloth must without delay be subjected to oxidation Tests 9 and 10.

Observations.—Rongalite C, manufactured by the Badische Anilin- u. Sodafabrik, and obtainable from their agents in all parts of the world, is crystalline hydrated-sodium formaldehydesulphoxylate, $CH_2 < \begin{matrix} OH \\ O \cdot SONa \end{matrix} + 2\,H_2O$. It is used commercially for producing discharge effects in color printing, and when hot is a powerful reducing agent, frequently converting dyestuffs into leuco derivatives or permanently destroying their chromophor groupings. Its advantage over some other hyposulphite derivatives that might have been selected as the reagent for this test, lies in its being a compound of definite known composition, which is readily soluble in water to a colorless solution distinguished by comparatively high stability at ordinary temperatures. The solution does, however, slowly decompose with separation of sulphur on keeping, and should not be employed for the test when more than two weeks old.

The velocity and completeness of the color discharging action of the reagent vary within narrow limits among species of the same genus. They are also somewhat influenced by the quantity of color on the cloth which is to be reduced.

A " *complete discharge,*" as the term is employed in the tables, signifies one in which the color of the cloth before removal from the test tube at the end of an experiment is white or pale creamy yellow. The reduction in the depth of color in any dyeing from a tone of any hue whatever not lighter than a " Tint 1," to a tone of any hue whatever that is not deeper than a " Tint 3 " (excepting Violet-Red, which should be discharged to what might be called a Tint 4), is to be counted as a discharge. Any color which is not a tone of OY or Y is also nominally discharged, when it is changed to a tint of OY or Y that is lighter in tone than the original color. (As an exception to these rules, Coeruleine, a color of Genus I, is accounted discharged when the change is from BG to OYS2.) These rather arbitrary definitions of what constitutes a " discharge " are unavoidable if it is desirable to be made to prevent the disorderly dispersion of species, regardless of natural relationship, into purely artificial genera.

Dyestuffs of Genus IV are sometimes partly stripped from the wool in this test, yielding colored solutions without being reduced. In other genera the reduction in hot rongalite solution is so rapid that the solutions usually remain nearly colorless, or merely become yellowish.

The time required for a discharge with species of Genera I, II, and III varies from one second to two minutes. The average time is lowest in Genus I, highest in Genus III, and for all colors is probably not far from half a minute, counting the time from the moment when boiling begins, and starting with a cold solution as is prescribed in the working directions.

TEST 9.

COLOR RETURNS BY AIR ON WOOL.

Expose to the air for ten minutes the piece of moist woolen cloth from which the color has just been discharged in Test 8.

If there is a color return of any hue except Y, OY, or YO, as deep in tone as a Tint 2, the dyestuff is to be sought in Genus I. If a return, as above defined, does not occur, proceed at once to Test 10 with potassium persulphate, using the same piece of cloth.

Observations. — The majority of azine, thiazine, and oxazine dyestuffs in Genus I give returns that are almost as deep in color as the original dyeings. But there is usually some loss, and the hue of the return is seldom quite identical with that of the original color, and in some instances is very different.

With many species the return is almost instantaneous; but it may require the entire ten minutes allowed.

TEST 10.

COLOR RETURNS BY POTASSIUM PERSULPHATE ON WOOL.

To 10 cc. of boiling water in a six-inch test tube, add ten drops of a cold saturated aqueous solution of potassium persulphate. Immerse in this solution the piece of woolen cloth which failed to give a color return in Test 9. After two minutes remove the cloth; rinse with cold water; and note the color.

The development of any hue *in a tone not lighter than a Tint* 2 of the color standard is to be regarded as a return, and should lead to an examination of the tables of Genus II for a description of the dyestuff.

Observations. — 100 parts of water at 0° C. dissolve 0.564 part of potassium persulphate. As the solution on long standing decomposes, acquiring an acid reaction, it should not be used for this test when more than two or three days old. Too long continued treatment with an excess of persulphate destroys some colors, and is therefore to be avoided.

The returns in this test for species of Genus II usually approach to within one chromatic hue unit (as defined in the footnote on p. 22) of the original dyeing. There are numerous cases, however, in which the observed difference amounts to two such units. The depth of the return is in a majority of cases not more than half that of the original color, though it may be considerably weaker than this, or on the other hand nearly equal that of the dyeing.

Slight returns, rarely exceeding a Tint 3, are sometimes observed in applying Test 9 (air oxidation) to species of Genus II. An air exposure prolonged much beyond the prescribed period may in such cases give as strong a return as persulphate would. Azo dyestuffs that yield para diamines among their reduction products may occasion a slight browning of the cloth when it is treated with persulphate.

TEST 11.

COLOR DISCHARGES AND RETURNS ON VAT-DYED COTTON.

(a) **Procedure for Hydrosulphite Vat Colors.** — Proceed as directed for Test 8, except that a piece of the well-wetted cotton cloth dyed in Test 6 is substituted for the wool, and that the boiling with Rongalite C solution is to be continued for four instead of two minutes, when a discharge is not obtained in a shorter time. Rinse the cloth with cold water, and after exposing it to the air for ten minutes, note whether there has been any return or change of color.

If a discharge and return (in the sense below defined) are observed, the description of the dyestuff is to be sought in Subdivision 2, Division B, of Genus I. If there is no discharge, the description is to be sought in Subdivision 2, Division B, of Genus IV.

Observations. — "*A discharge*" is *here* to be defined as a change in color terminating in any tone of Y [excepting Y Bkn (v. D)], GY, or YG. "*A return*" means an almost complete restoral of the original color of the dyeing.

It will be noticed that when discharges are obtained, they are slower than with the wool dyeings of Test 8. The final yellowish hue is gradually approached through a succession of intermediate hues. Colors which do not discharge are sometimes only very slightly affected in appearance, but more often become darker, and, if heavily dyed, almost black.

The air returns are slower than in Test 9; but, if time enough is allowed, they are very complete.

(b) **Procedure for Sulphur Colors Dyed on Cotton by Test 7.** — Proceed as directed in part (a) of this test, except that the period of actual boiling with the rongalite solution is to be shortened to two minutes.

If the color of the dyeing is changed by the treatment with rongalite to an extent corresponding to one full chromatic unit (as defined in the footnote on p. 22) of the color standard, and there is a pronounced return toward the original color after exposure to air, the description of the dyestuff is to be sought in Division A of Genus V; otherwise it must be looked for in Division B.

Observations. — The most common discharge color in this test is some tint or shade of yellow or orange-yellow. The returns are usually much like the original dyeings, though often less intense.

TEST 12.

DETERMINATION OF DIVISION AND SECTION.

The rules determining the " Division " of the classification to which any vat dyestuff belongs have already been stated under Test 11. All other dyestuffs which color cotton in Test 5 to tones not lighter than a Tint 2, or a " Broken (L) " tone, or a " Light Gray," belong to the " A " divisions of their respective genera. The remaining non-vat-dyeing colors, which either do not color cotton at all in Test 5, or only to tones lighter than above specified, belong to " B " divisions.

The "*Section*" to which a vat-dyeing color of any Division belongs is determined by the *hue* of its vat dyeings on cotton in Tests 6 or 7; and for all other classes of dyestuffs, by the *hues* of the direct dyeings on wool in Test 5.

[Each "Division" or "Subdivision" of the tables is further subdivided into eighteen "Sections," one section for each of the eighteen hues of the color standard. These sections are arranged in spectrum sequence, proceeding from the red toward the violet end.]

In making the color comparisons that will be used in determining the section, do not neglect to observe all the precautions to which attention will be called in Test 24 on "The Use of the Color Standard."

Observations. — Under these rules, the "A Divisions" contain large numbers of dyestuffs which are not direct cotton colors according to the dyer's classification. Many basic dyes like Fuchsine, and others which, while not in the true basic class still contain basic groups, have enough affinity for the cotton fiber when dyed and washed in the prescribed manner to easily distinguish them from colors of the "B Division" type. Sulphonated derivatives of colors of this latter type, as for instance Acid Fuchsine, show a weaker affinity for the cotton fiber, or do not adhere to it at all after a brief washing.

Although the Sections are the smallest formal groups of species contained in the tables, one of them will often be found to contain more than a score of dyestuffs. Pains taken in careful color comparison in the sectional testing will therefore be well repaid, by saving the annoyance of useless later experiments that would be performed should the wrong section be entered through accident. In doubtful cases, when the hue seems to lie midway between two of the standard hues, or the tone is very broken, so that exact comparison is difficult, it will be necessary to scrutinize the contents of two adjacent sections. Or it may be necessary to repeat a dyeing, to produce a tone at which the hue can be more certainly recognized.

C.

COÖRDINATION TESTS.*

Apply Test 13 (Action of Sulphuric Acid on dyed Wool) to all dyestuffs belonging to the A Divisions, and the first Subdivisions of the B Divisions, of Genera I and IV; also, to both the A and B Divisions of Genera II and III, and to all cotton dyeings obtained from the hydrosulphite vat colors of the second Subdivisions of the B Divisions of Genera I and IV.

Apply Test 14 (Action of Sodium Hydroxide on dyed Wool) to all dyestuffs belonging to the A Divisions, and the first Subdivisions of the B Divisions in Genera I and IV, and to both the A and B Divisions of Genera II and III.

Apply Test 15 (Action of Nitrous Acid on dyed Wool) to all dyestuffs belonging to the A Division, or the first Subdivision of the B Divisions, in Genus I, and to both the A and B Divisions in Genus II.

Apply Test 16 (Afterchroming Wool Dyeings) to all dyestuffs belonging to Genus III, and to all species in Genus IV except those in the second Subdivision of the B Division.

Test 17 (Fluorescence) is used as a coördinating test only in the VR Section of Division A, Genus II.

---

* *Coördination test* is the name that will be used to denote a test employed to fix the relative positions of species within the same section without the aid of further lower formal classificatory subdivisions. When more than one such test finds place in any section, a definite order of precedence governs their application. This precedence is indicated in the analytical tables by a numeral affixed to the test designation in the heading of the coördination test column, and is determined by the position of the hue produced in the test in the chromatic sequence of the solar spectrum or color standard. The function of these tests will be fully explained and illustrated in the description of the use of the tables given in Chapter III.

TEST 13.

ACTION OF SULPHURIC ACID ON TEXTILE DYEINGS.

Place a piece of dyed cloth about 7 millimeters square, cut from the same dyeing from which the material used for the rongalite reduction experiment of Tests 8 or 11 was taken, in one of the shallow circular depressions of a glazed white porcelain tile of the kind used for observing " end reactions " in volumetric analysis. [The cover of a very small Berlin porcelain crucible from which the looped handle has been removed is a fairly satisfactory substitute for the tile.] Cover the cloth with pure concentrated sulphuric acid. If the titration tile is used, about one cubic centimeter will be needed. Work the acid gently into the fiber of the cloth, by the aid of a small glass rod, so as to expel air bubbles and wet it quickly. If the color produced is black or very dark, separate some of the woven threads under the acid so that they may be observed apart from the cloth.* Place the tile on the windowed screen of one of the color standard cards, and match the colors both of the cloth and of the separated threads quickly and carefully. This observation is always to be made after the cloth has been worked in the acid for just 60 seconds. Should the cloth and threads both be black, make note also of the color of the solution.

Observations. — Although it will be necessary to limit the duration of the action of the acid to a sixty-second period, all the tabulated results being based on this time, it should be distinctly understood that the color change does not invariably reach a maximum in so short a time. The change after the first minute is usually slow and slight, but the choice of a longer reaction period would probably have had advantages.

In a very few instances, when the color of both the cloth and the fibers has been found too dark to permit matching for hue, the color of the sulphuric acid solution has been accepted as the coördinating hue, the color designation being preceded in descriptions by the abbreviation " (*sol.*)".

TEST 14.

ACTION OF SODIUM HYDROXIDE ON TEXTILE DYEINGS.

The directions for this procedure are identical with those given for Test 13, except that a ten per cent aqueous solution of sodium hydroxide is here to be substituted for " sulphuric acid."

Observations. — The reason for not applying this test to dyeings with the vat colors is the fact that this class of colors is not in general appreciably changed in appearance by cold alkali.

TEST 15.

ACTION OF NITROUS ACID ON WOOL DYEINGS.

Place one square inch of the well-wetted woolen cloth dyed in Test 5 in a six-inch test tube. Add 10 cc. of the nitrous acid reagent † and boil for one minute, or for a shorter time if the cloth should become yellow sooner. Wash the cloth with water, and note its color when dry.

---

* In descriptions of results from this test in the tables: "(*cl*) " denotes that the color which follows was observed on the cloth when viewed as a whole; " (*f*) " the color as seen in the fibers of separated threads; while the absence of these abbreviations means that the description relates to the color of the cloth, and that no note was made of the color of the fibers.

† **Nitrous Acid Reagent.** — Add 3 cc. of sulphuric acid (sp. grav. 1.84) to a solution of 1.5 grams of sodium nitrite in one liter of distilled water. The sodium nitrite solution may be kept in stock, but after acidification it should not be used when more than a few hours old.

> **Observations.** — In principle this test is identical with that proposed by A. G. Rota in the *Chemiker Zeitung* (Coethen), 1898, p. 439, nitrous acid usually attacking dyestuffs containing amino or imino groups and causing a progressive change in hue in the direction of yellow or green. The exact hue resulting from an application of this test is less significant than in Tests 13 and 14, which as coördinating tests consequently take precedence over it in the order of their application. The rate of change in hue has been found to be much influenced by the quantity of dye present, and by differences in the twist of the threads.

TEST 16.

AFTERCHROMING WOOL DYEINGS.

To one square inch of well-wetted woolen cloth dyed by the procedure of Test 5, add 10 cc. of afterchroming solution.* Stand the heavy test tube in which the cloth and afterchroming solution are placed in a narrow water bath in which a three-inch layer of water is kept gently boiling. Prevent the cloth from floating on the surface by pinning it down with a slender glass rod. Stopper the tube loosely, and continue the heating for thirty minutes. Rinse the cloth twice in fresh boiling water. Wring. Dry. Compare the color of the cloth carefully with the color standard.

> **Observations.** — The object of this test is to enable the subdivision of the several Sections of Genera III and IV into informal subsections according to the magnitude of the afterchroming color changes, but not to indicate what shades would be given certain dyestuffs in commercial afterchromings. Descriptions of dyestuffs which are changed more than two chromatic units † in afterchroming are placed in a subsection preceding the others. The plus sign in a column of the tables before the designation of a color obtained in an afterchroming experiment denotes that the dyestuff concerned is located in a subsection in which the afterchroming change for all species is greater than two chromatic units. The minus sign similarly situated indicates location in a subsection where the change does not exceed two units. The plus subsections precede the minus ones in the tabulation without being formally separated from them by any explanatory printed heading.
>
> As there are certain sections in Genera III and IV in which this test would furnish few useful distinctions, it is in such places treated as a "special test," and not used for coördinating purposes.

TEST 17.

FLUORESCENCE.

Species in the Violet-Red Section of Genus II, Division A, if they give fluorescent solutions in alcohol in Test 2 (d), are described in an informal subsection before the other species of the Section.

---

* **Afterchroming Solution.** — This is prepared by dissolving 1.5 grams of potassium dichromate and 1.5 grams of sulphuric acid (sp. grav., 1.84) in five liters of water.

† A "*chromatic unit*" being the color interval between any two adjacent colors of the standard, whether in the scale of hues or tones, a change from O to OY, or to OT2, or to YOSl would be changes of precisely two chromatic units. A change from O to Y, or to OY → would, however, be changes of more than two units. The change from a normal tone to a broken medium tone is counted as a change of one unit.

D.

SPECIAL TESTS.

Having found the approximate location of a dyestuff in the analytical tables by aid of the tests directed in the earlier key paragraphs, apply as many of the Special Tests (Nos. 18–24) receiving mention on the right hand pages of the tables at this point as seem likely from the context to assist in the final identification.

All identifications should, if possible, be verified by the application of Test 23.

TEST 18.

PRECIPITATION TESTS.

Use for these tests three cubic centimeter portions of the clear aqueous solution reserved for the purpose at the conclusion of Test 2 (a). Fully saturated solutions of very difficultly soluble colors may be prepared by shaking the powdered material with hot water, cooling, shaking persistently, and then filtering; but *hot* solutions are never to be used unless their employment is directly suggested by the tables.

Run the volume of reagent specified for each experiment into the test tube containing the solution from a pipette. Then, with occasional shaking, tap the tube rapidly but lightly against a block of soft wood for 60 seconds to facilitate precipitation. Note the result without further delay. If the solution is very deeply colored or opaque, in examining it for a precipitate, incline the tube until it makes a very acute angle with a sheet of white paper resting horizontally on a table in a good light. If precipitation is then so considerable that the solvent, as seen between the separating solid flocks or particles, has the appearance of being nearly colorless, the precipitation is to be described as "*complete.*"[*] Note the color of precipitates while in suspension; also any marked color changes following the addition of a reagent which fails to cause precipitation.

(a) **Precipitations with Sulphuric Acid.** — Add three drops of concentrated sulphuric acid to three cubic centimeters of the dyestuff solution.

(b) **Precipitations with Sodium Hydroxide, and with the Sulphates of Calcium, Chromium, and Copper.** — Add one cubic centimeter of each of these precipitants to separate three cubic centimeter portions of the dyestuff solution. The reagent solutions are to be prepared to have the concentrations stated in the footnote.[†]

---

[*] In the tables, the description of such a precipitation would begin with the chemical formula of the precipitant, which would be followed by the plus sign and the abbreviation for the word "complete," as for example "H_2SO_4 + compl." The plus sign alone in such descriptions may indicate a precipitation which is only partial, so that a filtrate from it would be colored. The minus sign indicates that no precipitate has been observed. The plus and minus sign (±) indicates that the precipitation is very scanty, a mere cloudiness, or doubtful.

[†]

Sodium Hydroxide, per liter	100 grams NaOH.
Chromium Sulphate, per liter	4 grams $Cr_2(SO_4)_3 \cdot 15\ H_2O$.
Copper Sulphate, per liter	4 grams $CuSO_4 \cdot 5\ H_2O$.

Calcium Sulphate, a cold saturated solution of $CaSO_4 \cdot 2\ H_2O$.

The calcium sulphate solution, if prepared by shaking an excess of calcined plaster of Paris with water, must be allowed to stand for a day or two before filtering. Otherwise, a precipitate will gradually make its appearance, the calcined plaster at first dissolving as $CaSO_4 \cdot \frac{1}{2}\ H_2O$, that is more soluble than the more highly hydrated gypsum into which it later changes.

(c) **Precipitations with Tannin.** — Add the tannin solution * drop by drop to five cubic centimeters of the dye solution, shaking well after each addition, until six drops of the reagent have been used, unless a precipitate is produced by a smaller quantity. If there is no precipitate, bring the mixture to boiling and shake again.

Observations. — The precipitation tests have long played a conspicuous rôle in qualitative dye testing. Their reliability as a class is considerably lessened by the uncertainties arising from our limited knowledge of the influence of such factors as concentration of the solution, excess of reagent, presence of neutral salts, tendency to form supersaturated solutions, etc., and the consequent difficulty in always experimenting under strictly comparable conditions when commercial products are under examination.

Some tannin precipitates are readily dissolved by an excess of the reagent; and a few do not appear until the solution is heated. "Basic dyestuffs" are always precipitated by tannin, the precipitates being usually flocculent and complete; but the sulphonated derivates of the same colors may or may not be precipitated. It is interesting to note, in this connection, that species of Genera I and II which do not color cotton as deeply as a Tint 2, almost never give a precipitate with tannin; while those which do give precipitates with tannin almost invariably stain cotton distinctly enough to bring them into the A Divisions of the tables.

TEST 19.

DYEINGS ON MORDANTED WOOL.

Repeat Test 5, substituting chrome or alumina mordanted wool † for the unmordanted wool, and omitting the cotton.

Observations. — The colors obtained in this test do not necessarily correspond closely to commercial dyeings that would be made with the same dyestuffs and mordants, the time prescribed for the dyeing being much less than is generally required to fully develop and fix the colors.

The alizarine and other oxyketone colors which give striking results and are always mordanted in practice, also dye the wool directly in Test 5, though in different and duller hues.

TEST 20.

DIAZOTIZATION AND DEVELOPMENT WITH β-NAPHTHOL.

Place small pieces of the well-wetted woolen and cotton cloths dyed in Test 5 in a small beaker, and cover with a cold freshly prepared diazotized bath made by mixing 1 cc. of a 10 per cent solution of sodium nitrite, 20 cc. of water, and 3 drops of concentrated sulphuric acid. Work the cloth about in the solution with a glass rod for two minutes.

---

* **Tannin Reagent.** — This is prepared by dissolving 5 grams of gallotannic acid and an equal weight of crystallized sodium carbonate in 50 cc. of water. The solution does not keep well, and should not be used if more than a few days old.

† **Chrome Mordanted Wool.** — Enter 10 grams of the woolen Henrietta cloth used in Test 5 in a solution of 0.3 gram of potassium dichromate and 0.25 gram of acid potassium tartrate in 300 cc. of cold water. Heat the solution so as to bring it to boiling in twenty minutes, working the cloth about at frequent intervals. Maintain a boiling temperature for an hour, working the cloth over occasionally. Wash well with cold water. Dry the mordanted cloth at the room temperature, and preserve in a dark place until required for use.

Alumina Mordanted Wool. — Enter 10 grams of Henrietta cloth in a solution of 0.7 gram of aluminium sulphate and 0.6 gram of acid potassium tartrate in 300 cc. of cold water. Heat very slowly, so as to bring the solution to boiling at the end of one hour. Boil for half an hour. Allow the solution to cool. Remove the cloth and wash it very thoroughly with water.

The chromed wool deteriorates on exposure to the light, but in the dry condition may be preserved for many days without injury if kept in the dark. The alumina mordanted wool is difficult to wet out evenly when once dried, and it is hence better to use it at once after washing.

Wring the cloth, and transfer without washing to a second beaker containing a developing bath consisting of 20 cc. of a solution made by dissolving 1 gram of β-naphthol in 4 cc. of 10 per cent sodium hydroxide solution diluted with 50 cc. of water. Allow the development to proceed for ten minutes, occasionally working the cloths about with a rod. Wash well, first with cold, and then with boiling water. Note the colors of the cloths after drying.

Observations. — The number of cases in which this test is of great importance is not large, even in the group of dyestuffs to which diazotization and development are usually applied, and its conditions are such that the colors obtained are not generally identical with those that would be secured in commercial dyeings. The commercially diazotized and developed colors are usually dyed on cotton, but in a few instances also on silk.

TEST 21.

REDUCTION PRODUCTS OF AZO DYESTUFFS.

Dissolve one gram of the dyestuff in the smallest possible quantity of boiling water. Run into the hot solution from a burette, while constantly shaking, successive 0.5 cc. portions of a nearly saturated solution of Blankit T * until the color is discharged. Boil for some seconds after each addition, since the reduction, although rapid, is not instantaneous. A large excess of the reagent is to be avoided.

Add ammonia or sodium hydroxide to the solution until the reaction is distinctly alkaline. Cool well, and shake vigorously. If a solid precipitate separates, collect it on a small filter; drain it by suction; and wash it with a very little cold water. Recrystallize from hot water, dilute alcohol, or other suitable solvent, and endeavor to identify it by an examination of its melting point, other physical properties, reactions and derivatives. If an oily liquid precipitate is formed, it may be isolated for examination by extraction with ether, or — if volatile with steam — by a steam distillation.

The solution from which a precipitate has been removed should be saved, as it will usually contain one or more additional reduction products whose investigation may be desirable or necessary.

For further suggestions in regard to procedures by means of which the reduction products of this test may be identified, consult the following "Observations."

Observations. — The isolation and identification of its reduction products do not form an indispensable part of the procedure for the examination of every azo dyestuff. Yet, in cases of difficulty, there is no other test which in skillful hands is capable of yielding equally conclusive results. Moreover, the usefulness of the method is not limited to dyestuffs described in the analytical tables; for it also often affords a means for investigating colors whose constitution has never been disclosed to the public.

The literature of the test contains numerous detailed accounts of its application to special colors. Until recently preference has usually been given to stannous chloride in acid solution as the reducing agent. The advantages in the use of sodium hydrosulphite are, however, so considerable, that few cases are likely to be found in which any of the other reducing agents that have thus far been recommended will be preferred.

---

* **Blankit T Solution.** — This solution must be freshly prepared for each experiment by dissolving 10 grams of Blankit T (of the Badische Company) in 40 cc. of cold water. "Sodium Hydrosolphite Conc.," made by the Badische Company, may doubtless be substituted for "Blankit T," since it was employed by Grandmougin in the experiments which first demonstrated the advantages of this method of reduction. (Cf. Ber. d. deut. chem. Ges., 1906, p. 2494, and Jour. f. prak. Chem., 1907, p. 124.)

As most azo dyestuffs can be dissolved in from ten to fifteen cubic centimeters of hot water, and the volume of Blankit T solution required for the test rarely amounts to ten centimeters, the reduction can often be carried out in a test tube. In some cases, however, as much as one hundred cubic centimeters of water will have to be used, and the experiment performed in a small flask.

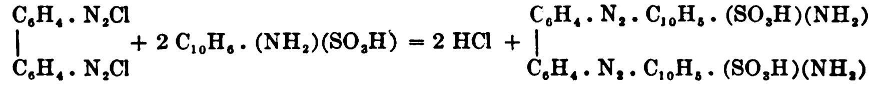
The quantity of any single reduction product that will be obtained in a condition of purity from one gram of a dyestuff, after deducting the losses incurred in the processes of isolation and purification, will not often much exceed one decigram. But this is enough to enable all necessary confirmatory tests: provided that the species has been correctly located in the tables by aid of the generic, divisional, coördinating, and special tests; that its constitutional name is known and stated in the third tabular column; that detailed procedures for the confirmatory tests are existent, or are specially elaborated in advance of the experiment; and that the precautions emphasized in regard to the manipulation of small quantities on page 234, Volume I, are taken. To meet all these provisos is sometimes easy, but sometimes impossible without experimenting on a larger scale and converting the test into an extended organic chemical research. The real difficulties of the test are greatly lessened by the circumstance that the number of " first components " used in the manufacture of a majority of the present azo dyestuffs of commerce is not excessively large, and that simple special procedures for identifying most of them can be given.[*] Thus in the list of less than four hundred chemically distinct azo dyestuff species of known constitution listed in the fourth edition of Schultz and Julius' Tables, three hundred and twelve species have as their " first components"[†] a list of aromatic amines comprising only thirteen members. The number of times which each of these thirteen first components occurs in this list of colors is as follows: — benzidine, 67; o-tolidine, 40; dianisidine, 29; sulphanilic acid, 26; p-phenylene-diamine, 25; aniline, 22; naphthionic acid, 17; α-naphthylamine, 17; p-nitraniline, 12; o-toluidine, 13; 4-diaminonaphthalene, 12; xylidine, 11; 3-methyl-3,4-diaminobenzene, 11; diaminostilbenedisulphonic acid, 10.

The separation and identification of reduction products which pass into the alkaline filtrate from a precipitate in this test, often present a difficult analytical problem, since the mixture is very liable to contain sodium salts of two or three sulphonic acids whose solubilities and reactions do not differ widely. For a detailed description of the application of Test 21 to the disazo dyestuff Congo Red, the reader is referred to Chapter III.

---

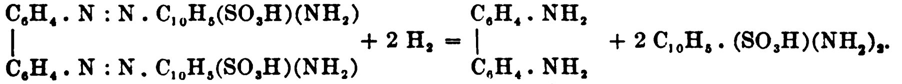
[*] The description of these procedures belongs for the most part to Vol. II of this work, which is in preparation for publication.

[†] **Azo Dyestuff Components and Reduction Products.** — Azo dyestuffs are prepared by coupling reactions between diazotized primary amines, which are termed "*first components,*" and phenolic or amine salts termed "*second* " or " *third components.*" On reduction, an azo dyestuff undergoes cleavage at each of the azo groups which it may contain, each nitrogen atom of each azo radical yielding an amino group. Hence one of the reduction products must always be identical with a "*first component* " except in cases when the first component itself contains reducible groups. Second and third components, on the contrary, are not obtained as reduction products, but we secure in their place their amine derivatives. Thus, Congo Red, which has benzidine as its first, and " naphthionic acid " as its second component, gives benzidine as its first reduction product, and *di*-aminonaphthalenesulphonic acid as its second reduction product.



$$\begin{array}{l} C_6H_4 . N_2Cl \\ | \\ C_6H_4 . N_2Cl \end{array} + 2\,C_{10}H_6 . (NH_2)(SO_3H) = 2\,HCl + \begin{array}{l} C_6H_4 . N_2 . C_{10}H_5 . (SO_3H)(NH_2) \\ | \\ C_6H_4 . N_2 . C_{10}H_5 . (SO_3H)(NH_2) \end{array}$$

Diazotized benzidine salt. Naphthionic Acid. Congo Red.



$$\begin{array}{l} C_6H_4 . N : N . C_{10}H_5(SO_3H)(NH_2) \\ | \\ C_6H_4 . N : N . C_{10}H_5(SO_3H)(NH_2) \end{array} + 2\,H_2 = \begin{array}{l} C_6H_4 . NH_2 \\ | \\ C_6H_4 . NH_2 \end{array} + 2\,C_{10}H_5 . (SO_3H)(NH_2)_2.$$

Congo Red. Benzidine. Amino-naphthionic Acid.

TEST 22.

ABSORPTION SPECTRA.

Determine the exact positions in wave lengths of the maxima of the absorption bands appearing in the spectrum obtained by passing a beam of white light through a solution of the dyestuff into a spectrometer provided with cross hairs, a carefully calibrated scale, and a micrometer screw movement. The technique of the method may best be learned by a series of practice exercises, consulting Formánek's manuals (cf. p. 3) for detailed working directions.

Observations. — The analyst who is provided with a suitable spectroscope, and has trained himself to be a skillful observer with the instrument, will have a great advantage over those who are limited to the use of dyeing and chemical tests. This is especially true in work with the brilliant colors of Genera I, II, and III, and in the examination of mixtures where the total quantity of color available is small. (See Chapter IV.) He should not neglect Formánek's cautions: to make all observations in a dark room in which no light from any source shall enter the eye, except that passing through the spectroscope; to frequently test the adjustment of the vernier and micrometer scales by observations made on the Fraunhofer lines; and to always use the mean of a number of independent readings as the accepted result.

The spectroscopic data of the tables have interest when compared with Formánek's, in showing about what degree of agreement may be expected between the measurements made by different observers on dyestuffs bearing the same names, but secured at different dates, from far separated agencies of the manufacturers. The data were mostly obtained by Mr. U. Tsukakoshi or by Mr. J. McGowan, Jr., working in the writer's laboratory with the type of Krüss spectroscope (made in Hamburg) recommended by Formánek in his " Spektral-analytischer Nachweis organischer Farbstoffe (edition of 1900). Each datum is the average of six readings made by approaching the absorption band by the intersection of the cross hairs, thrice from the right, and thrice from the left. These data are recorded in the tables in terms of the arbitrary unit of the Krüss instrument; but, by aid of the conversion table below the corresponding values in wave lengths may be readily ascertained. Data printed in italic type are measurements of major bands (i.e., such as disappear last on dilution of the solutions); while those not italicized are minor bands. These tables, unlike Formánek's, do not contain measurements of difficultly visible minor bands, and often show only the major band as measured in a single favorable solvent. Dyestuffs not accompanied by spectroscopic description often possess characteristic spectra.

TABLES FOR THE
CONVERSION OF KRÜSS SPECTROMETER UNITS INTO WAVE LENGTHS.

Scale Units.	Wave Lengths.	Scale Units.	Wave Lengths.	Scale Units.	Wave Lengths.	Scale Units.	Wave Lengths.
6.00	741.0	**7.00**	691.5	**8.00**	652.0	**9.00**	617.5
05	738.2	05	689.2	05	650.2	05	616.0
10	735.5	10	687.0	10	648.4	10	614.5
15	732.7	15	684.9	15	646.6	15	613.0
20	730.0	20	682.2	20	644.8	20	611.5
25	727.5	25	680.7	25	643.0	25	610.0
30	725.0	30	678.7	30	641.2	30	608.5
35	722.5	35	676.7	35	639.5	35	607.0
40	720.0	40	674.7	40	637.7	40	605.5
45	717.5	45	672.7	45	636.0	45	604.1
50	715.0	50	670.7	50	634.2	50	602.7
55	712.5	55	668.7	55	632.5	55	601.3
60	710.0	60	666.7	60	630.7	60	599.9
65	707.5	65	664.7	65	629.0	65	598.5
70	705.0	70	662.8	70	627.2	70	597.2
75	702.7	75	661.0	75	625.5	75	595.9
80	700.5	80	659.2	80	623.9	80	594.6
85	698.2	85	657.4	85	622.3	85	593.3
90	696.0	90	655.6	90	620.7	90	592.0
95	693.7	95	653.8	95	619.1	95	590.7

Scale Units.	Wave Lengths.	Scale Units.	Wave Lengths.	Scale Units.	Wave Lengths.	Scale Units.	Wave Lengths.
10.00	589.5	**13.00**	524.3	**16.00**	478.9	**19.00**	445.5
05	588.2	05	523.4	05	478.3	05	445.0
10	587.0	10	522.5	10	477.6	10	444.5
15	585.7	15	521.6	15	477.0	15	444.0
20	584.5	20	520.7	20	476.3	20	443.5
25	583.2	25	519.9	25	475.7	25	443.0
30	582.0	30	519.1	30	475.1	30	442.6
35	580.7	35	518.3	35	474.5	35	442.1
40	579.5	40	517.5	40	473.9	40	441.7
45	578.2	45	516.6	45	473.3	45	441.2
50	577.0	50	515.8	50	472.7	50	440.8
55	575.7	55	515.0	55	472.1	55	440.3
60	574.5	60	514.1	60	471.5	60	439.9
65	573.2	65	513.3	65	470.9	65	439.4
70	572.0	70	512.5	70	470.3	70	439.0
75	570.7	75	511.6	75	469.7	75	438.5
80	569.5	80	510.8	80	469.1	80	438.1
85	568.2	85	510.0	85	468.5	85	437.6
90	567.0	90	509.1	90	467.9	90	437.2
95	565.8	95	508.3	95	467.3	95	436.7
11.00	564.6	**14.00**	507.5	**17.00**	466.7	**20.00**	436.3
05	563.5	05	506.7	05	466.1	05	435.8
10	562.4	10	506.0	10	465.5	10	435.4
15	561.3	15	505.2	15	464.9	15	434.9
20	560.2	20	504.5	20	464.4	20	434.5
25	559.1	25	503.7	25	463.8	25	434.1
30	558.0	30	503.0	30	463.3	30	433.7
35	556.9	35	502.2	35	462.7	35	433.3
40	555.8	40	501.5	40	462.2	40	432.9
45	554.7	45	500.7	45	461.6	45	432.5
50	553.6	50	500.0	50	461.1	50	432.1
55	552.5	55	499.2	55	460.5	55	431.7
60	551.4	60	498.5	60	460.0	60	431.3
65	550.3	65	497.7	65	459.4	65	430.9
70	549.2	70	497.0	70	458.9	70	430.5
75	548.2	75	496.2	75	458.3	75	430.1
80	547.2	80	495.5	80	457.8	80	429.7
85	546.2	85	494.7	85	457.2	85	429.3
90	545.2	90	494.0	90	456.7	90	428.9
95	544.2	95	493.3	95	456.1	95	428.4
12.00	543.2	**15.00**	492.6	**18.00**	455.6	**21.00**	428.0
05	542.2	05	491.9	05	455.0	05	427.6
10	541.2	10	491.2	10	454.5	10	427.2
15	540.2	15	490.5	15	454.0	15	426.8
20	539.2	20	489.8	20	453.5	20	426.4
25	538.2	25	489.1	25	453.0	25	426.0
30	537.2	30	488.4	30	452.5	30	425.6
35	536.2	35	487.7	35	452.0	35	425.2
40	535.3	40	487.0	40	451.5	40	424.8
45	534.3	45	486.3	45	451.0	45	424.4
50	533.4	50	485.6	50	450.5	50	424.0
55	532.4	55	484.9	55	450.0	55	423.6
60	531.5	60	484.2	60	449.5	60	423.2
65	530.6	65	483.5	65	449.0	65	422.8
70	529.7	70	482.8	70	448.5	70	422.4
75	528.8	75	482.2	75	448.0	75	422.0
80	527.9	80	481.5	80	447.5	80	421.6
85	527.0	85	480.9	85	447.0	85	421.2
90	526.1	90	480.2	90	446.5	90	420.8
95	525.2	95	479.6	95	446.0	95	420.4
						22.00	420.0

TEST 23.

VERIFICATION TESTS.

After all *preliminary, divisional,* and *coördinating tests* that are mandatory according to the key paragraphs A, B, C, and all the special tests suggested by the context of the tables in the section where a particular dyestuff should be found described have been applied, it may happen that the properties of the color are found to approach those of the dyestuffs described under several neighboring serial numbers so closely, that, in view of the possible slight observational errors, the identification will be felt to be inconclusive. It is then desirable, as indeed it is always in identifications of importance, to verify any conclusion that may have been provisionally reached, by procuring from reliable sources samples of the possibly identical colors, and submitting them, side by side with the unknown dyestuff, to all the tests of the regular procedure, taking every precaution that all conditions in each of the parallel experiments shall be strictly identical.

In repeating the dyeing tests comparatively, it will be better to substitute for the methods of the numbered tests, the special methods that are recommended for commercial dyeing with the colors in question by their makers. The dyeing will then require more time, but the dyeings will be more level, and the baths probably better exhausted.

If the colors are not all of equal concentration, the quantities weighed out should be in inverse proportion to their tinctorial powers; for, if the dyeings can be made to match, they must be made to do so, in order to have suitable material for comparison in the tests with reagents on the dyed cloth that will follow. The ratios of the concentrations may be determined by rough colorimetric comparisons of the dyestuff solutions. Use such quantities that the dyeings from well-exhausted baths shall never be much deeper than normal tones.

In Tests 13 and 14, the reagents must be applied simultaneously to each of the several dyeings under comparison in neighboring cavities of the titration tile. Dyeings which match perfectly in daylight should afterwards be carefully compared in a darkened room by gaslight or the light of an ordinary incandescent electric lamp, and other apparently identical color effects may also be advantageously reëxamined under a like illumination.*

Identical dyestuffs will show identical behavior in all these comparative tests.

TEST 24.

USE OF THE COLOR STANDARD.

Do not attempt to make color comparisons without having first become thoroughly familiar with the terminology of color that is used in this work and explained under " *Observations.*"

Make all comparisons close to a window, through which a pure reflected light from the sky — but not direct sunlight — falls upon the colored object and the color standard.

---

* For an instructive and well-illustrated discussion of the fact that, " In examining the blue, violet, and green class of colors, and also many compound shades, slight differences in hue or optical structure, which might be overlooked while matching in white daylight, become so accentuated under an orange illuminant as to be at once apparent," see Chapter VIII of " Color-matching on Textiles," by D. Patterson, London, 1901.

If the colored object is a piece of dyed cloth, lay it on the white cardboard screen close to its rectangular window, and move the screen about over the surface of the proper standard card until portions of the two squares of color on the standard which most nearly match the color under examination are visible through the opening. If the colored material is a powder, spread it out on a piece of white paper before laying it on the screen. In Tests 13 and 14 (Action of Acid or Alkali on Dyed Cloth) place the clean titration tile on the screen near the window. The purpose of the screen is partly to prevent the confusion to the eye that occurs when many kinds of color are under observation at the same moment, and partly to protect the standard from injury.

To examine the color of a solution, as in Test 3, stand with the back to the window, and hold the six-inch test tube in which the comparison will be made parallel with the standard and screen, holding the latter in a vertical position at a distance of two inches behind the test tube. The comparison will then be made by aid of light passing over the observer's shoulder, and reflected back to his eye from the white surface of the screen through the solution.

Observations. — All exact descriptions of color in this volume are expressed in terms of the Milton Bradley color standard.* Such a standard, consisting of the color sheets, C, D, and E, and a perforated cardboard screen, will be found in a pocket in the back cover of this volume. Sheets C and D contain together ninety normal tones, tints and shades. Sheet E contains thirty-six broken tones, and eight grays.

To prevent possible misunderstandings on the part of readers who may be unfamiliar with Volume I, it will be necessary to here define the sense in which certain fundamental color terms will be used. The definitions given have the sanction of high authority, although some of the terms are used popularly and by dyers with different and less restricted meanings.

A *Pure*, *Full*, or *Saturated Color* is the most intense expression of that color without admixture of white, black, or gray. No pigmentary color is absolutely pure. In the standard sheets C and D at the back of this volume, the third horizontal series of colors designated as *Normal Tones* approach most closely to the "pure colors," though unfortunately less saturated than the colors of certain dyestuffs which have to be compared with them.

The *Luminosity* of a color is that constant of it which is dependent on the quantity of light that it transmits to the eye, and is nearly equivalent to brightness. Two colors may be equal in "purity" and alike in hue, but cannot be made to match except by exposing the brighter surface to a feebler illumination.

The *Hue* of a color is in some respects its most fundamental quality. It depends entirely on the refrangibility, or wave length, of the kinds of light producing the sensation. The purity and luminosity of two colors may be absolutely equal, but one may appear red and the other yellow. The difference is one of hue. Each color in the standard in going from red to violet is a distinct hue.

A *Tint* is the result obtained by reducing a pure color, or normal tone, by the addition of white light. In the standard sheets C and D, the two color rectangles immediately over each normal tone are its first and second tints. Tints 3 and 4, not represented on the standard sheets, but sometimes mentioned in descriptions, may be imagined as tints of about one half or one quarter the saturation of a Tint 2.

A *Shade* of a color is the result obtained when a normal tone is viewed in shadow. With pigments, shades are obtained by adding black. The two shades of each normal tone in the standard are placed directly beneath it. In these pages, contrary to what is a common usage among artists and dyers, a difference in *hue* is never referred to as a difference in *shade*.

---

* An account of the origin of this standard may be found in "Elementary Color," Milton Bradley, Springfield, 1895, and on p. 232, Vol. I, of the present "Method." The standard sheets in Vol. I are designated Sheets A and B. They contain the same colors as appear on sheets C, D, and E in Vol. III, except that the grays and the light and daik broken tones are omitted.

Colors identical in hue, but differing in saturation, as in the case of the tints, normal tone, and shades of violet-red on Sheet C, are designated *Tones* of that hue.

A *Broken Tone* is a subdued color obtained by mixing a full color with neutral gray (black and white); or by viewing the tint of a color in shadow, or a shade in strong sunlight. Sheet E contains *light*, *medium*, and *dark broken tones* in twelve of the eighteen hues.

The sensation of *Neutral Gray* is received when we view a white surface in shadow, or a mixture of pigmentary black and white. The other grays of the standard, Warm, Cool, and Green, result from the infusion of neutral gray with a trace of an orange, bluish, or greenish hue too inconsiderable to cause them to match any of the standard broken tones.

The following are the color abbreviations or symbols in the tables and elsewhere in the text to represent color data that have been secured by an actual comparison with the color standard.

R = RED; OR = ORANGE–RED; RO = RED–ORANGE; O = ORANGE;
YO = YELLOW–ORANGE; OY = ORANGE–YELLOW; Y = YELLOW;
GY = GREEN–YELLOW; YG = YELLOW–GREEN; G = GREEN; BG = BLUE–GREEN;
GB = GREEN–BLUE; B = BLUE; VB = VIOLET–BLUE; BV = BLUE–VIOLET;
V = VIOLET; RV = RED–VIOLET; VR = VIOLET–RED.
T = Tint; S = Shade; Bkn = Broken.
VRT1 = Violet-red Tint 1; BGS2 = Blue-green Shade 2.
YO Bkn(L)(M) or (D) = a Light, Medium, or Dark tone of Broken Yellow-orange.

A color midway between two colors of the standard is represented by the symbols for those colors separated by a dash.

RT1 – ORT1 (or R – OR, T1) is a color midway between the first Tints of Red and Orange-red. OR – RO is a color midway between the normal tones of Orange-red and Red-orange.

A long or short arrow preceding or following a color symbol indicates a distinct or a very slight deviation in the hue of the color from that of the nearest standard color, and that the deviation appears to be in the direction of a hue to the right or left in the spectrum circuit as it is represented on the color sheets.

VR→ = VR with a possible slight tendency toward R. ⟵R = R with a distinct tendency toward VR.

The sign + following a color symbol means that the tone is slightly more *saturated* than would be implied by the symbol alone. The sign –, on the contrary, signifies that the tone is a *less saturated* one. The word "*dull* ' means that the color is slightly " broken."

The sheets of the color standard ought never to be exposed to strong sunlight, nor even to ordinary diffused light when not in actual use. It is poor economy to continue to use sheets that have become unreliable by fading or soiling.*

---

* Additional copies of the standard — consisting of the three sheets C, D and E — are kept on sale at the price of one dollar, net, by John Wiley & Sons, 43–45 East 19th Street, New York; and in London, by Chapman & Hall, for four shillings and sixpence, net.

If the colored object is a piece of dyed cloth, lay it on the white cardboard screen close to its rectangular window, and move the screen about over the surface of the proper standard card until portions of the two squares of color on the standard which most nearly match the color under examination are visible through the opening. If the colored material is a powder, spread it out on a piece of white paper before laying it on the screen. In Tests 13 and 14 (Action of Acid or Alkali on Dyed Cloth) place the clean titration tile on the screen near the window. The purpose of the screen is partly to prevent the confusion to the eye that occurs when many kinds of color are under observation at the same moment, and partly to protect the standard from injury.

To examine the color of a solution, as in Test 3, stand with the back to the window, and hold the six-inch test tube in which the comparison will be made parallel with the standard and screen, holding the latter in a vertical position at a distance of two inches behind the test tube. The comparison will then be made by aid of light passing over the observer's shoulder, and reflected back to his eye from the white surface of the screen through the solution.

Observations. — All exact descriptions of color in this volume are expressed in terms of the Milton Bradley color standard.* Such a standard, consisting of the color sheets, C, D, and E, and a perforated cardboard screen, will be found in a pocket in the back cover of this volume. Sheets C and D contain together ninety normal tones, tints and shades. Sheet E contains thirty-six broken tones, and eight grays.

To prevent possible misunderstandings on the part of readers who may be unfamiliar with Volume I, it will be necessary to here define the sense in which certain fundamental color terms will be used. The definitions given have the sanction of high authority, although some of the terms are used popularly and by dyers with different and less restricted meanings.

A *Pure, Full,* or *Saturated Color* is the most intense expression of that color without admixture of white, black, or gray. No pigmentary color is absolutely pure. In the standard sheets C and D at the back of this volume, the third horizontal series of colors designated as *Normal Tones* approach most closely to the " pure colors," though unfortunately less saturated than the colors of certain dyestuffs which have to be compared with them.

The *Luminosity* of a color is that constant of it which is dependent on the quantity of light that it transmits to the eye, and is nearly equivalent to brightness. Two colors may be equal in " purity " and alike in hue, but cannot be made to match except by exposing the brighter surface to a feebler illumination.

The *Hue* of a color is in some respects its most fundamental quality. It depends entirely on the refrangibility, or wave length, of the kinds of light producing the sensation. The purity and luminosity of two colors may be absolutely equal, but one may appear red and the other yellow. The difference is one of hue. Each color in the standard in going from red to violet is a distinct hue.

A *Tint* is the result obtained by reducing a pure color, or normal tone, by the addition of white light. In the standard sheets C and D, the two color rectangles immediately over each normal tone are its first and second tints. Tints 3 and 4, not represented on the standard sheets, but sometimes mentioned in descriptions, may be imagined as tints of about one half or one quarter the saturation of a Tint 2.

A *Shade* of a color is the result obtained when a normal tone is viewed in shadow. With pigments, shades are obtained by adding black. The two shades of each normal tone in the standard are placed directly beneath it. In these pages, contrary to what is a common usage among artists and dyers, a difference in *hue* is never referred to as a difference in *shade*.

---

* An account of the origin of this standard may be found in " Elementary Color," Milton Bradley, Springfield, 1895, and on p. 232, Vol. I, of the present " Method." The standard sheets in Vol. I are designated Sheets A and B. They contain the same colors as appear on sheets C, D, and E in Vol. III, except that the grays and the light and dark broken tones are omitted.

Colors identical in hue, but differing in saturation, as in the case of the tints, normal tone, and shades of violet-red on Sheet C, are designated *Tones* of that hue.

A *Broken Tone* is a subdued color obtained by mixing a full color with neutral gray (black and white); or by viewing the tint of a color in shadow, or a shade in strong sunlight. Sheet E contains *light*, *medium*, and *dark broken tones* in twelve of the eighteen hues.

The sensation of *Neutral Gray* is received when we view a white surface in shadow, or a mixture of pigmentary black and white. The other grays of the standard, Warm, Cool, and Green, result from the infusion of neutral gray with a trace of an orange, bluish, or greenish hue too inconsiderable to cause them to match any of the standard broken tones.

The following are the color abbreviations or symbols in the tables and elsewhere in the text to represent color data that have been secured by an actual comparison with the color standard.

R = RED; OR = ORANGE-RED; RO = RED-ORANGE; O = ORANGE; YO = YELLOW-ORANGE; OY = ORANGE-YELLOW; Y = YELLOW; GY = GREEN-YELLOW; YG = YELLOW-GREEN; G = GREEN; BG = BLUE-GREEN; GB = GREEN-BLUE; B = BLUE; VB = VIOLET-BLUE; BV = BLUE-VIOLET; V = VIOLET; RV = RED-VIOLET; VR = VIOLET-RED.

T = Tint; S = Shade; Bkn = Broken.

VRT1 = Violet-red Tint 1; BGS2 = Blue-green Shade 2.

YO Bkn(L)(M) or (D) = a Light, Medium, or Dark tone of Broken Yellow-orange.

A color midway between two colors of the standard is represented by the symbols for those colors separated by a dash.

RT1 – ORT1 (or R – OR, T1) is a color midway between the first Tints of Red and Orange-red. OR – RO is a color midway between the normal tones of Orange-red and Red-orange.

A long or short arrow preceding or following a color symbol indicates a distinct or a very slight deviation in the hue of the color from that of the nearest standard color, and that the deviation appears to be in the direction of a hue to the right or left in the spectrum circuit as it is represented on the color sheets.

VR→ = VR with a possible slight tendency toward R. ←——R = R with a distinct tendency toward VR.

The sign + following a color symbol means that the tone is slightly more *saturated* than would be implied by the symbol alone. The sign –, on the contrary, signifies that the tone is a *less saturated* one. The word "*dull* ' means that the color is slightly " broken."

The sheets of the color standard ought never to be exposed to strong sunlight, nor even to ordinary diffused light when not in actual use. It is poor economy to continue to use sheets that have become unreliable by fading or soiling.*

---

* Additional copies of the standard — consisting of the three sheets C, D and E — are kept on sale at the price of one dollar, net, by John Wiley & Sons, 43–45 East 19th Street, New York; and in London, by Chapman & Hall, for four shillings and sixpence, net.

CHAPTER III.

USE OF THE ANALYTICAL TABLES.

A strict adherence to the principles of classification laid down in the first chapter of Volume I would require the dispersion of the dyestuff species through various *orders* according to their qualitative elementary composition. As such an arrangement in the analytical system would be open to serious practical objections, the dyestuffs are here treated as an independent *class* whose first and most important subordinate groups are the *genera;* while between the genus and the species stand the division, subdivision, section, subsection, and the coördinating sequence. Although these classificatory units have already been partially explained elsewhere, some further definitions at this point are desirable.

A *genus* comprises all species characterized by showing a common chemical behavior in the prescribed generic tests. These tests are so chosen as to generally make congeners of species having similar chromophoric structure. The genera are therefore artificial only in as far as the unavoidable limitations of these tests lead to the association of dyestuffs containing chromophores of different types. Such cases in most of the genera are exceptional.

Each genus is first subdivided into a *Division A* and a *Division B*. The distinction between these divisions is based on the relative tinctorial affinities of the species of the divisions toward cotton, except in Genus V, where it depends on the ability of atmospheric oxygen to restore the color of a dyeing after it has been discharged by reduction. The position of any division in any genus is readily found by a glance at the page headings of the tables.

Subdivisions occur only in the B Divisions of Genera I and IV, the second subdivision in each of these groups being reserved for its hydrosulphite vat colors.

A *section* comprises the species of a division or subdivision which dye wool or cotton — as may be specified by the sectional test — to the same hue, or to hues which when expressed in terms of the color standard are not separated by one entire hue unit. It should be kept in mind that some coloring matters show polychroic effects in dyeing, the hue varying appreciably according to the depth of the dyeing. In looking for the description of such a dyestuff in the tables, the inspection of two adjacent sections is to be recommended.

Subsections are informal divisions of a section sometimes used in Genus III. Where subsections occur, species whose dyeings on wool are changed more than two chromatic units in hue or tone by After-chroming Test 16 are described before those which are not so changed, and are distinguished by the presence of the [+] sign; while the [−] sign indicates a species of the second subsection.

A *coördinated sequence* is the succession of species forming a subsection (or section) when arranged in a fixed order determined by the hues produced in coördination tests. (See footnote under *key paragraphs C.*) Species giving hues in these tests near the red end of the spectrum in a first coördinating test, precede those giving hues nearer the violet end. Among species giving the same hue in a first coördinating test, those are first described which give hues nearer the red end of the spectrum in the second coördinating test, and so on.

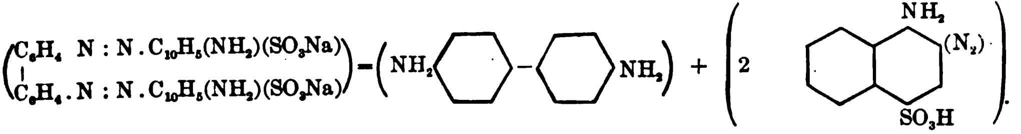
One *serial marginal number* would have been assigned to represent all dyestuff brands which are identical as compounds, if commercial conditions had not made it impossible to obtain absolute guarantees for the composition and purity of all the specimens studied. As a matter of fact, the assignment of the same serial number to two or more of the commercial brands mentioned in a column under the heading "Trade Name" — as for the Methylene Blues under No. 23 — means merely that the mandatory tests of the general procedure do not show sufficient differences between the brands to enable one to certainly distinguish between them. The several brands under a common serial number are each provided with parenthetical subnumbers for convenience in reference, and any differences between their properties which may have been observed are noted. Careful comparative dyeing tests (Test 23), or the application of additional methods of investigation, might sometimes prove that species now thus associated should be separated.

The *trade name* of a dyestuff always includes as an essential part the name of a manufacturer; since, by a practice of questionable propriety, the same trade name is sometimes given to entirely distinct colors by different makers. The abbreviation for the maker's name is printed at the end of the trade name inclosed by a bracket. A list of these abbreviations will be found at the end of this chapter following the list of general abbreviations employed in the tables.

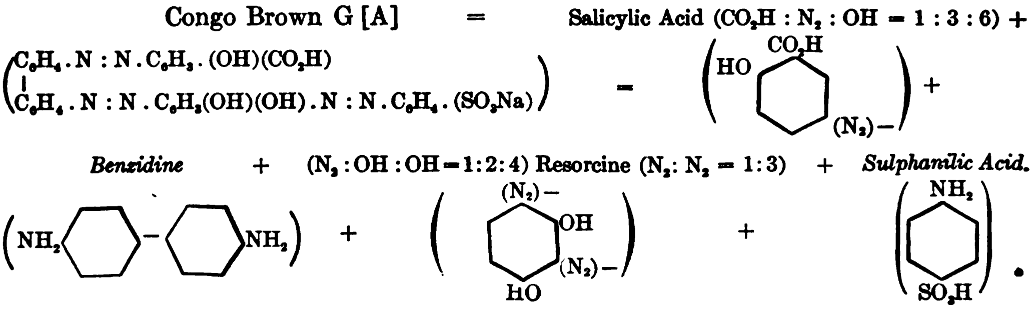
.Dyestuffs referred to on right-hand pages of the tables as "*Allied brands* " have been given their positions on the strength of such authority as the works of Schultz and Julius, Green, Heumann, the general dyestuff literature, and, in a few cases, private communications from makers. Original experiments have not been made with such brands to verify the alleged relationships, either with one another or with the colors on the left-hand pages, which latter have all been directly examined.

The *constitutional names* of the tables require no special explanation, except in the case of the azo colors, where a slight departure from the usual terminology has been made in order to indicate without structural formulæ what reduction products may be expected from the application of Test 21. The name of an azo dyestuff according to this nomenclature is formed by printing in succession, connected by plus signs, the names of the "components" by whose coupling it is prepared. A diazotized "first component" is distinguished by being printed in italic type; and the position of each N_2 group which substitutes for a hydrogen atom in a non-diazotized component in the coupling reaction, and is reduced to two amino groups on reduction, is indicated by orientation numerals inclosed by parentheses. Besides showing almost at a glance what the reduction products of any azo dye whose constitution has been made public should be, these names also give a ready means for constructing its full constitutional formula. The following example will serve to illustrate their use:

Congo [A] = *Benzidine* + 2 mol. Naphthionic Acid ($N_2:NH_2$=2:1).


C_6H_4 N : N . $C_{10}H_5(NH_2)(SO_3Na)$
C_6H_4 . N : N . $C_{10}H_5(NH_2)(SO_3Na)$
NH_2
NH_2
+
2
NH_2
(N_2)
SO_3H

Hence its reduction products, obtained by cleavage between the nitrogen atoms of its azo groups will be: first, benzidine, its first component ; and, second, two molecules of 1, 2-diaminonaphthalene-4-sulphonic acid.



Congo Brown G [A] = Salicylic Acid ($CO_2H : N_2 : OH = 1 : 3 : 6$) +

$$\left(\begin{array}{l} C_6H_4 . N : N . C_6H_3 . (OH)(CO_2H) \\ C_6H_4 . N : N . C_6H_2(OH)(OH) . N : N . C_6H_4 . (SO_3Na) \end{array}\right)$$

Benzidine + ($N_2 : OH : OH = 1 : 2 : 4$) Resorcine ($N_2 : N_2 = 1 : 3$) + *Sulphanilic Acid.*

It is therefore a trisazo dyestuff and should yield by reduction and cleavage at its three azo groups: its two "first components," benzidine and sulphanilic acid, and 1,3-diamino-2,4-dihydroxy-benzene derived by the substitution of two amino groups in place of two hydrogen atoms in its resorcine component.

Under "*Dyeing*," on right-hand pages of the tables, the usual commercial dyeing methods employed with each color are suggested by combinations of letters which are explained in the " List of Abbreviations." Detailed special dyeing formulæ for the individual colors will be found in the publications and sample cards issued by the manufacturers, or, for the older dyestuffs, in "Lehne's Tabellarische Uebersicht über die organischen Farbstoffe," or any of the comprehensive treatises on dyeing.

To illustrate how experimental data secured through the numbered tests of the analytical procedure selected in conformity with the directions of the key paragraphs are utilized in connection with the tables in making identifications, two specific examples will be given.

EXAMPLE 1.

Preliminary Tests. — By Tests 1–a and 1–b the dyestuff is found to be homogeneous. Test 2 shows it to be easily soluble, the solutions being: in water, R and ROT2; in alcohol, O–RO; and in concentrated sulphuric acid, VB. In Test 5 it dyes wool ORT1 dull, and cotton RT2. Test 4 proves it not to be a sulphur color; and the introductory paragraphs of Tests 6 and 7 show that these tests need not be applied.

Generic, Divisional and Sectional Tests. — Test 8 with Rongalite C discharges the dyeing on wool in one minute, and oxidation Tests 9 and 10 cause no return of color. The dyestuff therefore belongs to Genus III, and the colors of the dyeings on wool and cotton place it in the OR Section of Division A, following the rules stated under Test 12.

Coördination Tests. — Sulphuric acid in Test 13 turns the dyed woolen cloth so dark that the color has to be matched on separated fibers, which are BT1. Test 14 with sodium hydroxide changes the cloth to R. Test 15 is unnecessary. The color from the afterchroming treatment of Test 16 is RO–O, T1 slightly dull. This is a change of only about one and one-half chromatic units. Hence the dyestuff is to be sought in the [—] Subsection.

Special Tests. — Turning to the subsection of the tables indicated, we find that Serial Number 412 represents the only described species showing the same behavior as our dyestuff in all the tests employed up to this point. The precipitation tests (Test 18) mentioned on the right-hand page of the tables are next made, and the results still agree with the description under No. 412. There is now little doubt that our dyestuff is Congo; but if we wish to verify this conclusion by additional evidence, one or more of the Tests 21, 22 and 23 will be applied.

The "constitutional name" of Congo, as has been pointed out in an illustration on the preceding page, indicates that this dyestuff should give benzidine and 1,2-diaminonaphthalene-4-sulphonic acid as reduction products in Test 21. Adapting our procedure to identify one or both of these compounds we proceed as follows: —

4 cc. of Blankit T reagent on being added to a solution of 1 gram of the dyestuffs in 15 cc. of boiling water discharges the color after a few seconds. The solution, after being made strongly alkaline with ammonia and cooled, deposits a crystalline precipitate. This is washed on a filter with 10 cc. of cold water by suction, and dissolved in 10 cc. of boiling water. The hot solution is treated with a slight

excess of dilute sulphuric acid. Benzidine is precipitated in the form of its difficultly soluble sulphate. The sulphate is collected on a very small filter and washed by suction with 10 cc. of cold water. It is next brought into a test tube and the benzidine liberated from its salt by boiling with 10 cc. of dilute ammonia. The benzidine passing into solution, the solution is filtered boiling hot, using a hot funnel only 2 cc. in diameter. The filtrate, when cooled and shaken, gives a pearly crystalline precipitate. This is washed with a few cubic centimeters of cold water and dried. It then weighs 0.11 gram and melts at 124.5° C. (uncor.). Its identity as benzidine is further established by dissolving 0.05 gram in 4 cc. of alcohol, adding three drops of benzaldehyde, washing the heavy precipitate which forms with 2 cc. of alcohol, and recrystallizing three times from hot benzene. The derivative is obtained in the form of faintly violet tinged scales, melting at 239° C. (cor.), and is dibenzylidenebenzidine.

The 1,2-diaminonaphthalene-4-sulphonic acid in the ammoniacal filtrate from which the crude benzidine was first separated, may now be converted into its characteristic quinoxaline derivative by acidifying with acetic acid and precipitating hot by addition of an aqueous solution of phenanthrenequinone in sodium bisulphite and sodium acetate. The procedure for preparing and identifying this quinoxaline presents no difficulty, but is hardly of sufficient practical interest to require description in this example.

EXAMPLE 2.

Preliminary Tests. — The dyestuff is a homogeneous R Bkn(M) powder easily soluble in water or in alcohol to a RO, or in concentrated sulphuric acid, to an OY solution. In Test 5 it dyes wool a very brilliant R, but leaves cotton almost white. Test 4 proves it not to be a sulphur color.

Generic, Divisional and Sectional Tests. — Test 8 does not change the color of the dyed wool appreciably, although some dye passes into the rongalite, giving a red and slightly fluorescent solution. In consequence of its behavior in this test and in Test 5, the dyestuff evidently belongs, according to the rules of Test 12, to the R Section of Division B of Genus IV.

Coördination Tests. — Sulphuric acid in Test 13 changes the dyeing on wool to YO; and sodium hydroxide in test 14 leaves it R +.

Special Tests. — Inspection of the indicated section of the tables shows that our dyestuff may be one of the species described under the serial numbers 1112 to 1116. The special tests mentioned on right-hand pages of the tables under these numbers are now applied. Test 18 gives: with sulphuric acid, and with the sulphates of chromium, copper or calcium, complete precipitation; with sodium hydroxide, no precipitate, but an OR–O solution. The absorption spectra obtained in Test 22 show two distinct bands. The maximum of absorption for the major band is at 12.88 with the aqueous solution, and at 12.07 with the alcoholic. The minor bands are at 15.37 with the aqueous solution, and at 14.45 with the alcoholic. The dyestuff is therefore doubtless one of the brands of Erythrosine belonging under serial number 1113. This conclusion may be further strengthened, if desired, by applying the "ordinal test" of Volume I, Chapter 2, for iodine — which the "constitutional name" of these Erythrosines shows should be present — and by resort to Test 23.

LIST OF ABBREVIATIONS USED IN THE TABLES.

abt. = *about.* Indicates that the value following is only approximate.
ac. = *acid.*
aft-chr. = *after-chroming.* (See Test 16.)
alc. = *ethyl alcohol* (95 per cent).
alk. = *alkali* or *alkaline.*
alm. = *almost.*
aq. = *water.*
as. = *asymmetric.*
bkn. = *broken* (colors).
b.p. = *boiling-point.*
bril. = *brilliant.*
bz. = *benzene.*
c. = *cold,* or (with boiling or melting points) *corrected.*
CAl = used on cotton with an aluminum mordant.
CCh = used on cotton with a chromium mordant.
CD = used on cotton as a direct substantives dyestuff.
CDv. = used on cotton, the color being *developed* by a treatment following direct dyeing.
CT = used on cotton mordanted with tannin and antimony, or tannin.
chlf. = *chloroform.*
compl. = *complete.*
conc. = *concentrated.*
cryst. = *crystals, crystalline,* or *crystallizes.*
[D] = *dark* (following name of a broken tone or gray).
dil. = *dilute.*
dis. = *a discharge of color occurs,* or a change to a color which is specified.
dist. = *distils.*
d.s. = *difficultly soluble* (as defined under Test 3).
Et. = *ethyl.*
e.s. = *easily soluble* (as defined under Test 3).
ext. = *extra.*
(f) = *color of separated fibers in this test is* — —. (See footnote under Test 13.)
fr. = *from.*
filt. = *filtrate.*
floc. = *flocculent.*
fluor. = *fluorescence* or *fluorescent.*
h. = *hot.*

LIST OF ABBREVIATIONS USED IN THESE TABLES—*Continued.*

i. = *insoluble* (as defined under Test 3).
gran. = *granular.*
[L] = *light* (following name of a broken tone or gray).
liq. = *liquid.*
lgr. = *ligroïn.*
[M] = *medium* (following name of a broken tone or gray).
m. = *meta.*
mic. = *microscopic.*
Me = *methyl.*
m.p. = *melting-point.* (See Chap. XIII, Vol. 1.)
min. = *minute.*
No. = *serial number* (in tabular headings).
o. = *ortho.*
p. = *para.*
Ph. = *phenyl.*
ppt. = *precipitate* or *precipitates.*
ret. = *return* (of color).
s. = *soluble* (as defined under Test 3).
SA = used on silk in bath acidified with acetic acid.
sbl. = *sublimes.*
sec. = *second.*
sl. = *slight* or *slightly.*
sol. = *solution.*
T. = *Test.* (A "numbered test" of this volume.)
tan. = *tannin solution.* (See Test 18-c.)
uncor. = *uncorrected* (melting or boiling point).
v. = *very* or *vicinal.*
volat. = *volatile.*
w. = *with.*
WA = *dyed on wool in bath containing acetic acid.*
WACh = *dyed on wool from bath containing acetic acid to which chrome is later added.*
WGS = *dyed on wool from a bath containing Glauber's salt and sulphuric acid.*
WGSCh = *dyed on wool from bath containing Glauber's salt and sulphuric acid to which chrome is later added.*
WN = *used on wool in neutral bath.*
WCh = *used on chrome mordanted wool.*
WG = *used on wool in bath containing Glauber's salt.*

SIGNS.

+, −, ±, following the name or chemical formula of a reagent indicate that a precipitate does, or does not appear, or is so slight as to be nearly or quite negligible, in the test in question. (See Test 18.)

+, −, following the symbol of a color indicates that the tone of a hue is slightly nearer or farther removed from a normal tone than the tone of the hue specified.

[+], [−], when following "*Aft-chr.*" in a coördination test column of the tables indicates that the species in question belongs to a "plus or minus subsection." (See Test 16.)

→, ←, indicate slight deviations in hue to the right or left following the spectrum sequence. (See Test 24.)

[*The abbreviations employed for the colors of the color standard are explained under Test* 24.]

NAMES OF FIRMS.

[A] = Aktiengesellschaft für Anilinfabrikation in Berlin. (Berlin Aniline Company.)
[AD] = The American Dyewood Company, New York. (Successors of New York & Boston Dyewood Co.)
[At] = F. E. Atteaux (general dealer), Boston.
[B] = Badische Anilin- und Sodafabrik in Ludwigshafen-am-Rhein. (Badische Company.)
[BACo.] = British Alizarine Co., Ltd., London.
[BCF] = Basler Chemische Fabrik, Basel.
[BK] = Leipziger Anilinfabrik Beyer und Kegel, Leipzig. (Closed).
[BSS] = Brooke, Simpson & Spiller, Ltd., Hackney Wick, London.
[Bs] = C. Bischoff & Co. (dealers and agents for [D] and [L]), New York.
[By] = Farbenfabriken vorm. Friedr. Bayer & Co. in Elberfeld. (Farbenfabriken of Elberfeld Co.)
[C] = Leopold Cassella & Co. in Frankfurt-am-Main. (Cassella Color Co.)
[CJ] = Carl Jäger, Barmen.
[ClCo] = The Clayton Color Company, Ltd., Clayton, near Manchester, England.
[Cont.] = Continental Color Co., New York. (Formerly Agents for [B] and [By]. Closed.)
[CR] = Claus & Réa, Clayton, Manchester, England.
[D] = Dahl & Co. in Barmen, Germany.
[DH] = Farbwerke vorm. L. Durand, Huguenin & Co. in Basel and Hüningen.
[F] = Chemische Fabriken u. Asphaltwerke, Aktiengesellschaft Worms-am-Rhein.
[Fi] = A. Fischesser & Co., Mülhausen. (Closed.)
[G] = J. R. Geigy & Co. in Basel. (Geigy Aniline and Extract Co.)
[H] = Read Holliday & Sons, Ltd., Huddersfield, England.
[I] = Société pour l'Industrie Chimique (formerly Bindschedler & Busch), Basle. (Society of Chemical Industry, Basle.)
[K] = Kalle & Co. in Biebrich-am-Rhein.
[KB] = Küchler & Buff, Crefeld, Germany.
[Kell] = Geigy Aniline & Extract Co., New York, Agents for [G].
[Klp] = A Klipstein & Co., New York. Agents for [I].
[KS] = See [S].
[L] = Farbwerk Mühlheim vorm. A. Leonhardt & Co., Mülhheim bei Frankfurt-am-Main.
[Lev] = Levinstein, Ltd., Crumpsall Vale, Manchester, England.
[Lo] = Charles Lowe & Co., Stockport, England.
[LP] = Lucien Picard & Co., St. Fons, Lyons. (Operated by [A].)
[LSch] = Lembach & Schleicher, Biebrich-am-Rhein.

[M] = Farbwerke vorm. Meister, Lucius & Brüning in Höchst-am-Main.
[Math] = W. J. Mathesen & Co., Ltd. (Successor, [C].)
[MLy] = Manufacture Lyonaise des Matières Colorantes anonyme, Lyon. (See also [C.].)
[Mo] = Société Chimique des Usines du Rhone, St. Fons, Lyon.
[NJ] = Farbwerk Griesheim, Nötzel, Istel & Co., Griesheim-am-Main.
[O] = K. Ohler, Anilin und Anilinfarbenfabrik, Offenbach-am-Main. (Successors, Chemische Fabrik Griescheim-Elektron.)
[P] = Société Anonyme des Matières Colorantes et Produites Chimiques de St. Denis, Paris.
[PK] = Kutroff, Pickhardt & Co. (Successors, Badische Co.)
[PL] = Pick, Lange & Co. (Successors, Chemische Fabreik Amersfoort, Amersfoort, Holland.)
[RD] = Roberts, Dale & Co., Manchester and Warrington, England.
[RF] = J. Ruch et Fils, Pantin, France.
[S] = Chemisches Fabrik vorm. Sandoz in Basel.
[SB] = A. Sevez & Beasson, Lyon-Vaise, France.
[Sch] = Schoelkopf Aniline & Chemical Co. (Schoelkopf, Hartford & Hanna Co., successors), Buffalo, N. Y.
[SS] = W. F. Sykes & Co. (Dealers, and agents for P.)
[t.M] = Chemische Fabriken vorm. Weiler-ter-Mer, Urdingen-am-Rhein.
[Z] = Friedrich Zimmer, Mannheim, Germany.

DYES OF GENUS I, AZINES,

(COLORS DISCHARGED BY RONGALITE IN TEST 8

DIVISION A. — DYES COLORING COTTON TO TINT 2

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color (T.5); tannin ppt. (T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
1	H_2SO_4...GS3. NaOH...VR–RV.	(1) Dis., 5 sec.; air, RV. (2) Cotton, ←VRT2; tan., ppt. (3) Wool, VR bril.	**HELIOTROPE 2B [K].** Dimethyldiaminoxylylxylophenazonium chloride.
2	H_2SO_4...←G Bkn (D). NaOH... VR–RV.	(1) Dis., 10 sec.; air, VT1. (2) Cotton, VRT1; tan., ppt. (3) Wool, VR (duller and bluer than No. 3).	**METHYLENE VIOLET RRA powd. [M].** Dimethylsafranine chloride.
3	H_2SO_4...GT1. NaOH...VR–RV.	(1) Dis., 20 sec.; air, V. (2) Cotton, VRT1; tan., ppt. (3) Wool, VR.	**METHYLENE VIOLET RRA extra [M].** Dimethylsafranine chloride.
4	H_2SO_4...GS2. NaOH...VR.	(1) Dis., 5 sec.; air, RV. (2) Cotton, VRT2; tan., ppt. (3) Wool, VR–.	**GIROFLÉ [DH].** Dimethyldiaminophenyltoluphenazonium chloride.
5	H_2SO_4...G Bkn (M). NaOH ..VR–RV, T1.	(1) Compl. dis., 10 sec.; air, RVT1. (2) Cotton, VRT1; tan., ppt. (3) Wool, VRT1+.	(1) **RHODULINE RED B [By].** (2) **RHODULINE VIOLET [BY].** Dialkylsafranine. — (1890).
6	H_2SO_4...Black. NaOH...VR.	(1) OR Bkn(L) dis.; air, RV. (2) Cotton, VR; tan., ppt. (3) Wool, VR→.	**NAPTHALENE RED [Kahlbaum].** Mixture of aminonaphthyl- and diaminonaphthyl-naphthazonium chlorides.
			SECTION OF RED
7	H_2SO_4...(f) R. NaOH...ORS1.	(1) Y–OY dis., sol. yel.; pers. ret., YOS1. (2) Cotton, RT1. (3) Wool, R.	**DIAZO GERANINE B extra [By].** — (Intro. 1908). **RHODAMINE 3B [B].**
8	H_2SO_4...G bril. NaOH...R–VR, T1.	(1) Dis., 5–15 sec.; air, RV. (2) Cotton, ← RT2; tan., ppt. (3) Wool, ← RT1.	(1) **SAFRANINE [G].** (2) — **S.P. [C].** (3) — **MOOO [O].** (4) — **AY [B].** (5) — **NY [B].** (6) — **ext. conc. [K].** (7) — **F.F. ext. [By].** (8) — **2127 NI [C].** (9) — **S 150 [C].** (10) — **SUPERFINE YELLOW SHADE ext. [By].** Mixture of diamino-phenyl- and tolyl-tolazonium chlorides.
9	H_2SO_4...←(GT1–G). NaOH...←RT1.	(1) Dis., 15 sec.; air, ←VR. (2) Cotton, R–VR, T1; tan., ppt. (3) Wool, R–VR, T1.	**BRILLIANT SAFRANINE G [A].**

OXAZINES, THIAZINES, ETC.

AND RESTORED BY AIR IN TEST 9.)

OR A DEEPER TONE IN TEST 5. (SEE TEST 12.)

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark olive-green powder; s. aq. (dark red and VRT2); e. s. alc. (R–VR, T1) w. fluor.; s. conc. H_2SO_4 (G–BG). — HNO_3 (T.15), VR Bkn (L). — NaOH, no ppt. — Spectrum: 12.22, 10.89, weak double band (aq.); 11.25 (alc.). — Dyeing: CD. — Allied brands: Tannin Heliotrope [C]; Heliotrope B [K].	1
Dark brown powder; e. s. aq. (R–VR and VRT1); e. s. alc. (VRT1→) w. yel. fluor.; s. conc. H_2SO_4 (G→). — HNO_3 (T.15), YO Bkn (L). — Spectrum: 11.55 (alc.). — Dyeing: WN, SS, CT. — Allied brands: RRA [M]; Fuchsia [I]; Safranine MN [B]; Clementine [G]; Giroflé [DH]; Methylene Violet 3RA extra [M]; cf. No. 3 following.	2
Lustrous brown-black powder. — Spectrum: 11.35 (alc.). — Description otherwise as for No. 2 above.	3
Olive-black powder; s. aq. (R. and VR, T2→); e. s. alc. (R–VR, T1) w. yellowish fluor.; s. conc. H_2SO_4 (G–BG). — HNO_3 (T.15), R Bkn (L)→. — NaOH, no ppt. — Spectrum: 11.53 (alc.). — Dyeing: CT. — Allied brands: Clementine [G]; Safranine MN [B].	4
(2) Dark brown powder; e. s. aq. (bril. red, fluor. sol.); e. s. alc. (RT1→) w. strong yellowish fluor.; s. conc. H_2SO_4 (G→). (1) Dark brown powder; e. s. aq. (bril. VR→) w. feeble fluor.; e. s. alc. (bril. VR→) w. slight fluor.; s. conc. H_2SO_4 (G→). — HNO_3 (T.15), O–YO, Bkn (L). — Spectrum: 12.29 (aq.); *12.14* and 14.29 approx. (alc.). — Dyeing: WGS, SS. — Allied brand: Rhoduline Red G [By].	5
Dark brown powder; d. s. h. aq. (red fluor. sol.); e. s. alc. (VRT1→) w. strong yellowish fluor.; s. conc. H_2SO_4 (BV Bkn (L)). — HNO_3 (T.15), VR–R. — Spectrum: 10.76 (alc.). — Dyeing: CD. — Allied brands: Rose Magdala, Magdala Red [DH]; Naphthylamine Rose, Fast Pink for Silk [DH]; Naphthalin Scarlet, Sudan Red.	6
COLORS ON WOOL.	
RS2 powder; e. s. aq. (turbid R and RT2); s. alc. (OR); s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4 and Cr, +compl.; NaOH, Cu and Ca, all +. — Dyeing: CDv.	7
See No. 1002 for description.	
(1, 2, 3) Brown powders; (4) brassy yellow-green cryst. powder; (5, 6, 7, 8, 9, 10) red-brown powders; all e. s. aq. (OR or RO); all e. s. alc. (bril. red tints) w. fine yel. fluor.; s. conc. H_2SO_4 (G→). — HNO_3 (T.15), R or OR, Bkn (L). — NaOH, little or no ppt. — Spectrum: *12.37* (alc.) (sec. band v. weak). — Dyeing: SA, CT. — Allied brands: Safranine [DH] [Sch]; — T [B]; — ext. G [A]; — G ext., GGS, S [C]; — GOO [I]; — conc. [M]; — AG ext. [K]; — OOF, ext. bluish [K]; — Prima [H].	8
Brown powder; e. s. aq. (RO); e. s. alc. (OR) w. yel. fluor.; s. in conc. H_2SO_4 (G→). — HNO_3, (T.15), O Bkn (L). — NaOH, ± ppt. — Spectrum: 12.38 (alc.) (sec. band v. weak). — Dyeing: WGS, CT.	9

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
10	H_2SO_4...G–BG. NaOH...R–VRT.	(1) Dis., 15 sec.; air, VRT1 +. (2) Cotton, VRT1→; tan., ppt. (3) Wool, ←RT1, bril.	**BRILLIANT RHODULINE RED B** [By]. (1896).
11	H_2SO_4...G Bkn (M). NaOH...YO–OY, Sl.	(1) Dis., 10 sec.; air, O Bkn. (2) Cotton, VRT2→; tan., ppt. (3) Wool, R Bkn (M).	**NEUTRAL RED ext. [C].** Dimethyldiaminotoluphenazine hydrochloride. — (1879).
			SECTION OF ORANGE-RED
12	H_2SO_4...R Bkn (M). NaOH...OT1.	(1) Dis., 20 sec.; air, ←RT1 –. (2) Cotton, ORT2; tan., ppt. (3) Wool, ORT1.	**INDULINE SCARLET [B].** Aminoethyltolunaphthazonium chloride. — (1892).
			SECTION OF ORANGE
13	H_2SO_4...OS2. NaOH...OR–R, Bkn(M)	(1) Dis., 2 sec.; air, ORT2. (2) Cotton, VRT2; tan., ppt. ±. (3) Wool, OT1, sl. dull.	**BARWOOD [A.D.].** Wood of tree, *Baphia nitida*, growing in Sierra Leone and Angola.
14	H_2SO_4...(f) ORS2. NaOH...(f) R Bkn (D).	(1) OYT2, dis., 2 min.; air, O Bkn (L). (2) Cotton, VRT2. (3) Wool, O–OS1.	**RED SANDERS [A.D.]** Wood of tree, *Pterocarpus santalinus*, growing in Madagascar and tropical Asia. (Coloring principle santalin).
15	H_2SO_4...ROS1. NaOH...R Bkn (D).	(1) Alm. compl. dis., 2 min.; air, ORT2. (2) Cotton, VRT2. (3) Wool, OT1.	**CAMWOOD [A.D.].** Wood of tree imported from tropical Africa and Asia.
			ACRIDINE RED BB [L]
			SECTION OF ORANGE-YELLOW
16	H_2SO_4...ROS1. NaOH...OY. HNO_3....unchanged.	(1) Compl. dis., 1 min.; air, OY T2. (2) Cotton, ←Y sl. dull. (3) Wool, OY.	**STILBENE YELLOW 6G [ClCo].** A sodium salt of a nitrostilbene sulphonic ac. derivative.
			SECTION OF BLUE-GREEN
17	H_2SO_4...Y. NaOH...G→T1.	(1) Dis., 15 sec.; air, BGT1. (2) Cotton, BGT1→; tan., ppt. (3) Wool, BG→, bril.	**VICTORIA GREEN 3B [B].** Tetramethyldiaminodichlortriphenylcarbidride hydrochloride or zinc double chloride. — (1883).
			NEPTUNE BLUE BG [B].
18	H_2SO_4...YG Bkn (M). NaOH...O Bkn (M), approx.	(1) Alm. compl. dis., abt. 30 sec.; air, BGT2 +. (2) Cotton, ← GBT1; tan., ppt. (3) Wool, BGS1.	(1) **METHYLENE GREEN ext. yellow conc. [M].** (2) **METHYL GREEN B [BY].**
			SECTION OF GREEN-BLUE
19	H_2SO_4...O Bkn (M). NaOH...VR–R, T1.	(1) YT2 dis., 2 min.; air, GB→. (2) Cotton, GBT1 +; tan., ppt. (3) Wool, GB.	**CAPRI BLUE [L].** Dimethyldiethyldiaminotoluphenoxazonium zinc double chloride.
20	H_2SO_4...OS1. NaOH...←R bril.	(1) YT2 dis., 2 min.; air, GB–B. (2) Cotton, GBT1–BT1; tan., ppt. (3) Wool, GB–B.	**NILE BLUE BN** [Cont.].
21	H_2SO_4...GY Bkn (M). NaOH...RVT1.	(1) Compl. dis., 5 sec.; air, GB T2–T1. (2) Cotton, BT1; tan., ppt. (3) Wool, GB→ (greyish).	**TOLUIDINE BLUE B [B],** (pat. Nov. 26, 1889).
22	H_2SO_4...YGS1 (at first GS1). NaOH...VRT1	(1) Compl. dis., 5 sec.; air, ½ ret. (2) Cotton, BT1; tan., ppt. (3) Wool, GB→.	**NEW METHYLENE BLUE N** [C]. S. — Diethyldiaminotoluphenazthionium chloride. — (1891).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
R Bkn (D) powder; e. s. aq. (R–OR and VR, T1→) w. sl. fluor.; e. s. alc. (ORT1) w. strong yel. fluor.; s. conc. H_2SO_4 (G→). — HNO_3 (T.15), ROT1 sl. dull. — NaOH, dull orange ppt. — Dyeing: CT.	**10**
Greenish-black powder; e. s. aq. (R and VR, T2); e. s. alc. (←RT1) w. sl. fluor.; s. conc. H_2SO_4 (G–BG). — HNO_3 (T.15), YO Bkn (M). — NaOH, O–YO compl. ppt. — Spectrum: 12.17 (alc.) (sec. band v. weak). — Dyeing: CT. — Allied brands: Neutral Red [C] [DH]; Toluylene Red.	**11**
COLORS ON WOOL.	
ORS2 powder; s. aq. (RO); s. alc. (O) w. yel. fluor.; s. conc. H_2SO_4 (R).— HNO_3 (T.15), OT1. — NaOH, VRT1 ppt. — Spectrum: *14.55*; 12.30 (alc.). — Dyeing: CT.	**12**
COLORS ON WOOL.	
Ground wood ROS1; h. aq. gives turbid←YO filtrate; alc. sol. YO–OY; conc. H_2SO_4 sol. O–YO, S1. — HNO_3 (T.15), OY Bkn (M). — NaOH: no ppt. (OS1). — Spectrum: *16.53*, 13.96 (alc.). — Dyeing: Mixed shades on wool with logwood, fustic, etc., and met. mordants.	**13**
Ground wood, ROS1; boiling aq. gives sl. turbid (O→) filtrate; alc. sol. YO; s. conc. H_2SO_4(ROS1). — HNO_3 (T.15), ←OR Bkn (v.D.). — NaOH, no ppt. (sol. RS2). — Wool, black in After-chrome T.16. — Spectrum: 16.51; 13.92 (alc.) — Dyeing: same as No. 12. — Allied brands: Saunders Wood; Santal Wood.	**14**
Ground wood, ROS1; boiling aq. gives sl. turbid (O⟶) filtrate; s. alc. (YO); s. conc. H_2SO_4 (ROS1). — NaOH, clear RS2 s. — Wool, OR Bkn (v.D.) in After-chrome T.16. — Spectrum: *16.41*, 13.93 (alc.). — Dyeing: Same as Nos. 13 and 14. — Allied brand: Kambe wood. — Coloring matter said to be more easily sol. in water than that from Red Sanders or Barwood, and to dye bluer shade.	**15**
See No. 1031 for description.	
COLORS ON WOOL.	
OS1 powder; e. s. aq. (←OY and GY, T1); i. alc.; s. conc. H_2SO_4 (O). — Ppt. tests: tannin and NaOH, –. — Dyeing: CD, SS.	**16**
COLORS ON WOOL.	
Greenish-yel. cryst. w. met. lust.; s. aq. (GB); e. s. alc. (⟵GB); s. conc. H_2SO_4 (YO). — NaOH, BG→ s. pale, slowly becoming colorless. — HNO_3 (T.15), ←BG. — Spectrum: 8.39 (aq.). — Dyeing: WGS, SS, CT. — Allied brand: New Fast Green BB and 3B [I].	**17**
See No. 178 for description.	
Black powders; e. s. aq. (BG→ and BG, T2); s. alc. (BG→); s. conc. H_2SO_4 (G→). — NaOH, dark brown ppt. — HNO_3 (T.15), BGS2. — Spectrum: (1) *7.72*, 9.42 (aq.); (2) *7.78*, 9.40 (aq.). — Dyeing: CT. — ["Methylene Green, extra yellowish G (M) conc." is said to be a thiazine, and "Methylene Green (By)" a triphenylmethane color].	**18**
COLORS ON WOOL.	
Dark bronzy-green cryst. powder; e. s. aq. (GB); e. s. alc. (GB) w. sl. R fluor.; e. s. conc. H_2SO_4 (OR and O). — NaOH, compl. red ppt. — HNO_3 (T.15), BGS1. — Spectrum: *8.15*, 9.90 (aq.). — Dyeing: CT. — Allied (?) brand: Capri Blue GON [L]. [By].	**19**
Dark dull bronzy-green powder; e. s. aq. (GB); e. s. alc. (BG) w. sl. R fluor.; s. conc. H_2SO_4 (OR and O). — NaOH, ±OR ppt. — HNO_3 (T.15), BGS1. — Spectrum: *8.10*; 9.74 (aq.). — Dyeing: CT.	**20**
Black cryst. powder; s. aq. (B and GB); e. s. alc. (B and GB); s. conc. H_2SO_4(⟵G). — HNO_3 (T.15), G–YG Bkn (L). — NaOH, no ppt. (R Bkn (M) sol.). — Spectrum: *8.20*, 9.96 (aq.). — Dyeing: CT.	**21**
Dark brown powder, w. met. lustre; e. s. aq. (deep blue); e. s. alc. (B); s. conc. H_2SO_4 (G). — HNO_3: YG Bkn (L). — NaOH gives scanty VR ppt. — Spectrum: *8.50*, 10.05 (aq.). — Dyeing: CT.	**22**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
23	H_2SO_4...YGS1 (at first GS1). NaOH...GBT1.	(1) Compl. dis., 15 sec.; air, BG T1. (2) Cotton, ←BT2–T1; tan., ppt. (3) Wool, GBT1.	(1) **METHYLENE BLUE BB ext.** [M]. (2) — — **O** [B]. (3) — — **DBB** [M]. (4) — — **BB conc.** [M]. (5) — — **BB** [C]. (6) — — **O ext.** [B]. (7) — — **4/B 3/E BT** [SS]. (8) — — **BG** [SS]. (9) — — **BB** [By]. — (1) Tetramethyldiaminophenazthionium chloride or zinc double chloride.
24	H_2SO_4...YG. NaOH...←GBT1.	(1) Compl. dis., 10 sec.; air, ←GBT1+. (2) Cotton, ←GBT1; tan., ppt. (3) Wool, ←GBT1+.	**THIONINE BLUE G ext.** [M]. Trimethylethyldiaminophenazthionium zinc double chloride.—(1885).
25	H_2SO_4...YG, dull. NaOH....V Bkn (M).	(1) Compl. dis.; 20 sec.; air, BG T1. (2) Cotton, BT1–2; tan., ppt. (3) Wool, GBT1–.	**GENTIANINE** [G]. Dimethyldiaminophenazthionium zinc double chloride. — (1886).
26	H_2SO_4...YG or GY, S1. NaOH...Alm. unchanged.	(1) Compl. dis., 10–15 sec.; air, RVT1+. (2) Cotton, BG, or GB v. dull; tan., ppt. (3) Wool, GB Bkn (M+).	(1) **JANUS GREEN B** [M]. (2) **JANUS GREEN G** [M]. (1) Safranineazodimethylaniline chloride.
27	H_2SO_4...YGS1. NaOH...GB Bkn (D).	(1) Alm. compl. dis., 60 sec.; air, VT1. (2) Cotton,←GB sl. dull; tan., ppt. (3) Wool, GBS1 sl. dull.	**JANUS BLUE B** [M]. Azo-safranine dyestuff (?).
28	H_2SO_4...YGS1 (at first GS1). NaOH...GBT1.	(1) Compl. dis., 2 sec.; air, ←GB T1. (2) Cotton, GBT1+; tan., ppt. (3) Wool, GBT1+.	**METAPHENYLENE BLUE BB** [C]. Dimethyltolyldiaminotolylphenazonium chloride. — (1888).
29	H_2SO_4....←GT1. NaOH...BV Bkn (L).	(1) Compl. dis., 15 sec.; air ret. abt. ½. (2) Cotton←BT1; tan., ppt. (3) Wool, GBT1.	**METHYLENE BLUE free from Zn** [By].
30	H_2SO_4...(f) BG Bkn (D). NaOH...(f) VBS2.	(1) Y Bkn (L) dis., 1 min.; air, GBS1. (2) Cotton, ←BT1– (v. dull); tan., ppt. (3) Wool, GBS1.	**METHYLINDONE B** [C]. ("A water soluble induline.")
31	H_2SO_4...(f) GBS1. NaOH...(f) BS1→.	(1) YT1 dis., 30 sec.; air, BGS1. (2) Cotton, GB (v. dull); tan., ppt. (3) Wool, GB.	**PHENOCYANINE VS** [DH]. Diethylaminodioxyphenoxazineoxyphenyl ether. — (1893–4).
32	H_2SO_4...(f) GB, dull. NaOH...(f) BS1.	(1) Y T1 dis., 10 sec.; air, ←BG T1. (2) Cotton, GBT1 dull; tan., no ppt. (3) Wool, GBT1 (sl. dull).	**CHROME BLUE for PRINTING** [C] (Pat. Nov. 26, 1889.)
33	H_2SO_4...Warm gray(D). NaOH...OR Bkn (D).	(1) YT1 dis., 2 min.; air, BGS1; (2) Cotton, BT2+; tan., ppt. (3) Wool, GBS1.	**FAST BLUE 2B for COTTON** [A]. Dimethylaminodimethylaminoanilidonaphthophenazoxonium chloride. — (1889).
34	H_2SO_4...W to N gray (v.D). NaOH...R→Bkn (M–D).	(1) YT1 dis., 5 sec.; air, GB Bkn (M). (2) Cotton, RV to BV Bkn (L–M) tan., ppt. (3) Wool, GBS1.	(1) **NEW BLUE R** [C]. (2) — — [t.M]. (3) — — **125** [C]. (4) — — **ext.** [By]. (5) — — **D 110** [C]. (6) **FAST BLUE for COTTON R Cryst.** [A]. (7) — — **J powder** [B]. Dimethylaminonaphthophenoxazonium zinc double chloride. —(1879).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
(1, 4, 5, 8, 9) ROS3 cryst. powder; (2, 3) ←BGS2 bronzy powder; (6) bronzy dark yel.-green cryst. powder; (7) G Bkn (D) powder; (1, 4, 9) e. s. aq. (B and GB); (6) e. s. aq. (B); e. s. alc. (B and GB); s. conc. H_2SO_4(G).— HNO_3 (T.15), YG Bkn (M). — NaOH, no ppt. — Spectrum: *7.82*, 9.49 (alc.). — Dyeing: WN, SS, CT. Allied brands: — — B, BG [B]; — — BB, in powder ext. D [M] [A]; — — BB in powder extra [B] [M] [A]; — — D, BB ext. [M]; — — cryst [M]; Swiss blue [H]; Blue Methylene A ext. [Mo].	23
Dark yel.-green powder; e. s. aq. (B and GB); s. alc. (B); s. conc. H_2SO_4(G). — HNO_3 (T.15), GT1 sl. dull. — NaOH, no ppt. — Spectrum: *7.45*, 9.20 (aq). — Dyeing: WN, SA, CT. — Allied brand: O ext. [M].	24
Brown powder; e. s. aq. (BV and B); s. alc. (VB) w. sl. fluor.; s. conc. H_2SO_4(G). — HNO_3 (T.15), GY Bkn (L). — NaOH, ±ppt. — Spectrum: *7.51*, 9.41 (aq). — Dyeing: CT.	25
(2) Dark reddish-brown powder; (1) dark yel.-green powder; e. s. aq. (B and GB); e. s. alc. (←GB); s. conc. H_2SO_4 ((1) YGS1, (2) GYS1) — HNO_3 (T. 15), G Bkn (M). — (1) NaOH, no ppt.; (2) compl. ppt. — Dyeing: SA, CDv. — Allied brand: Diazine Green [K] is identical w. (1), but slightly different from (2).	26
Dark brown powder; s. aq. deep blue sol.; e. s. alc. (←GB); s. conc. H_2SO_4(←GYS1). — HNO_3 (T.15), BG Bkn (M). — NaOH, compl. BVS2 ppt. — Dyeing: SA, CDv.	27
Very dark brown powder; e. s. aq. (deep VB); e. s. alc. (VB); s. conc. H_2SO_4(N gray (D)). — HNO_3 (T.15), G Bkn (M). — NaOH, VS2 ppt. — Spectrum: 10.02 (aq); 10.43 (alc.). — Dyeing: CT. — Allied brand: Metaphenylene Blue B [C].	28
Alm. black, green-gray cryst. powder; e. s. aq. (deep VB and GB); e. s. alc. (B and GB); s. conc. H_2SO_4(G). — HNO_3 (T.15), YG dull. — NaOH, no ppt. — Dyeing: WN, SS, CT.	29
Dark brown powder; s. aq. (blue); e. s. alc. (B); s. conc. H_2SO_4 (cool gray). — HNO_3 (T.15), alm. unchanged. — NaOH, ±ppt. (BV Bkn (L)). — Spectrum: *7.74*, 9.86 (aq). — Dyeing: CT.	30
Dark green paste; e. s. aq. (G→); s. alc. (BG–G); s. conc. H_2SO_4(YGS1). — HNO_3 (T.15), OY Bkn (M). — NaOH, no ppt. (deep VB sol). — Spectrum: 8.43 (aq). — Dyeing: WCh.	31
Deep green paste; s. aq. (pale G→); s. alc. (BG–G); s. conc. H_2SO_4(YGS1). — HNO_3 (T.15), Y Bkn (M). — NaOH, no ppt. (VB sol.).	32
Dark brown powder, powder which provokes sneezing; s. aq. (deep VB); e. s. alc. (VB); s. conc. H_2SO_4(G–GB). — HNO_3 (T.15)←B Bkn (D). — NaOH, deep BG ppt. — Spectrum: *7.61*, 10.69 (aq.) — Dyeing: CT. — Allied brands: Fast Blue 2B for Cotton [P] [S]; New Blue G [t.M]; Metamine Blue B, G [L]; Fast Cotton Blue B [M]; Fast Marine Blue G [O]; Fast Marine Blue BM, GM [K].	33
Dark green to black cryst. powder which provokes sneezing; e. s. aq. (BV to RV); e. s. alc. (BV to RV); s. conc. H_2SO_4 (BG). — HNO_3 (T.15), BG–GB, S1. — NaOH, ppt. (GYS2) ± to + compl. according to the brand. Spectra: (2) *10.67*, 8.95, 12.64 (aq.); (5) *10.71*, 8.98, 12.44 (approx.) (aq.); (6) *10.73*, 8.95, 12.66 (aq.). — Dyeing: CT. — Allied brands: New Blue R [I] [By] [D]; New Cotton Fast Blue [I]; Naphthylene Blue R in crystals [By]; Fast Blue R, 2R and 3R for cotton in cryst. [A] [M]; Fast Navy Blue R [O]; Fast Navy Blue RM and MM [K]; Cotton Blue R [B] [P]; Meldola's Blue.	34

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF BLUE
35	H_2SO_4...OS2. NaOH...R-VR.	(1) Dis., 10 sec.; air, BT1 rapid. (2) Cotton, GB-B, T1; tan., ppt. on heating. (3) Wool, BT1 (bluer than "2B").	**NILE BLUE A [B].** Diethyldiaminonaphthophenazoxonium sulphate. — (1888).
36	H_2SO_4...OS2. NaOH...R-VR.	(1) Dis., 10 sec.; air, ←BT1. (2) Cotton, GBT1-BT1; tan., ppt. (3) Wool, ←BT1 (greener than "A").	**NILE BLUE 2B [B].** Diethylbenzyldiaminonaphthophenazoxonium chloride. — (1891).
37	H_2SO_4...YO Bkn (D). NaOH...RV Bkn (D).	(1) Dis., 5 sec.; air, GB→. (2) Cotton, ←BT1; tan., ppt. (3) Wool, BT1+sl. dull.	**NEW METHYLENE BLUE GG (C).** Tetramethyldiaminonaphthophenazoxonium chloride. — (1890).
38	H_2SO_4...GY Bkn (D). NaOH...RT2+ dull.	(1) Dis., 1 min.; air, BG→. (2) Cotton, BT2-1 dull; tan., ppt. (3) Wool, ←B Bkn (M).	**RHODULINE SKY BLUE BB [By].**
39	H_2SO_4...YGS1. NaOH...VRT1.	(1) Compl. dis., 5 sec.; air, GB or GBT1. (2) Cotton, BT1 (1); BT1→(2); tan., ppt. (3) Wool, ←BT1 (1); BT1 (2).	(1) **NEW METHYLENE BLUE F [By].** (2) **NEW METHYLENE BLUE FR [By].**
40	H_2SO_4...YGS1. NaOH...GBS1.	(1) Dis., 25 sec.; air, V, *bril.* (2) Cotton, BG Bkn (M); tan., ppt. (3) Wool, B Bkn (L); blk.	**JANUS BLACK D [M].** (Probably a mixed safranine-azo color.)
41	H_2SO_4...GY-YG. NaOH...B Bkn (L).	(1) Dis., 20 sec.; air, BGT1-2. (2) Cotton, ←BT2+; tan., ppt. (3) Wool, BT1-2.	**SOLID BLUE 7 [K].**
42	H_2SO_4...YGS2. NaOH...RV+.	(1) Dis., 10 sec.; air, GBT1, slowly in 10 min. (2) Cotton, BT1; tan., ppt. (3) Wool, BT1, sl. dull.	**TOLUIDINE BLUE O [M].** Dimethyldiaminotoluphenazthionium zinc double chloride. — (1888).
43	H_2SO_4...GS2. NaOH...VRS1.	(1) OYT2 dis., 15 sec.; air, BT1→, rapid. (2) Cotton, RVT2; tan., ±ppt. (3) Wool, BT1→.	**INDOCYANINE B for WOOL (A).**
44	H_2SO_4...BGS2. NaOH...YOS2.	(1) OYT2- dis., 10 sec.; air, G Bkn (L). (2) Cotton, ←GBT1; tan., ppt. (3) Wool, ←B Bkn (L).	**CRESYL BLUE [L].** Probably an oxazonium salt. — (1892).
45	H_2SO_4...B Bkn (M). NaOH...VS1.	(1) Compl. dis., 10 sec.; air, ⅔ ret. (2) Cotton, BVT2; tan., ±ppt. (3) Wool, BT1.	**BLUE 1900 [DH].** Leucogallocyanines. — (1898).
46	H_2SO_4...VBS2. NaOH...RVS1.	(1) Dis., 10 sec.; air, ½ ret. (2) Cotton, BV Bkn (L); no tan. ppt. (3) Wool, BT1+ dull.	**GALLOCYANINE powder [By].**
50	H_2SO_4...W-N gray (D). NaOH...O Bkn (D).	(1) Y dis.; air, BGS1 (1). (2) Cotton, VT2→. (3) Wool, B Bkn (D+) (1); BS2 (2).	**FAST INDIGO BLUE R [K].**
51	H_2SO_4...Cool gray (D). NaOH...BV Bkn (D).	(1) Pale yel. dis., 5 sec.; air, rapid and alm. compl. (2) Cotton, cool gray (M); no tan. ppt. (3) Wool, B Bkn (L).	**CINEREINE [P].** An induline (Fr. 2, 1890, 304).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark green dull bronzy cryst. powder; e. s. aq. (B and GB); e. s. alc. (GB and B) w. sl. R fluor.; s. conc. H_2SO_4 (OR). — HNO_2 (T.15), BG Bkn (M). — NaOH, compl. ppt. (R). — Spectrum: 8.19, 9.92 (aq). — Dyeing: CT.	35
Dark, dull bronzy-green cryst. powder; e. s. aq. (B and GB); e. s. alc. (B and GB) w. sl. red fluor.; s. conc. H_2SO_4 (OR and O). — HNO_2 (T.15), G Bkn (M). — NaOH, compl. ppt. (R). — Spectrum: *8.21*, 9.93 (aq). — Dyeing: CT.	36
Black powder; s. aq. (intense B and ←GB); s. alc. (GB); s. conc. H_2SO_4 (OS1 +). —HNO_2 (T.15), BG Bkn (D). — NaOH, compl. G Bk'n (D) ppt. — Spectrum: *7.84*, 9.72 (aq.); *7.88* (alc.). — Dyeing: CT.	37
Greenish-black powder; s. aq. (intense VB and B and GB); s. alc. (B) w. sl. R. fluor.; s. conc. H_2SO_4 (GS2). — HNO_2 (T.15), Y Bkn (M). — NaOH, ppt. (sol. ORS1). — Spectrum: *8.84*, 10.79 (aq.) — Dyeing: CT.	38
Black powder; e. s. aq. (intense VB and GB); e. s. alc. (GB and B); s. conc. H_2SO_4 (←G). — HNO_2 (T.15), GY Bkn (M). — NaOH, VR Bkn (D or M) ± ppt. — Spectrum: *8.07*, 9.81 (aq.); 8.38 (alc.). — Dyeing: CT.	39
Greenish-black powder; e. s. aq. (intense BG and BGS1); e. s. alc. (dull GB); s. conc. H_2SO_4 (YGS2). — HNO_2 (T.15), G gray (L). — NaOH, RV ppt. — Dyeing: SA, CDv.	40
O Bkn (D) powder; e. s. aq. (deep VB and GB); e. s. alc. (GB and B); s. conc. H_2SO_4 (G). — HNO_2 (T.15), ←GT1 dull. — NaOH, no ppt.	41
Dark brown powder; e, s. aq. (intense VB and GB); e. s. alc. (GB and B); s. conc. H_2SO_4 (←G). — HNO_2 (T.15), ←G Bkn (M). — NaOH, ± VR Bkn (D) ppt. — Spectrum: 8.66 (alc.). — Dyeing: CT. — Allied brand: Toluidine Blue O [B] [A].	42
Black powder; e. s. aq. (BV and RVT2); e. s. alc. (B); s. conc. H_2SO_4 (G→). — HNO_2 (T.15), B Bkn (M). — NaOH, VR and RVT2 sol., no ppt. — Spectrum: 10.00 approx. (alc.), broad ill-defined brand. — Dyeing: WA.	43
Dark green powder; e. s. aq. (VB and GB); e. s. alc. (B and GB); s. conc. H_2SO_4 (GS2). — HNO_2 (T.15), R Bkn (M). — NaOH, ± ppt. (OS1 sol.). — Spectrum: *8.59*, 10.36 (aq.). — Dyeing: CT. — Allied brands: Cresyl Blue BB, BBS (L).	44
Black cryst. powder; e. s. aq. (intense VB and B); e. s. alc. (B); s. conc. H_2SO_4 (BG Bkn (M) w. reddish fluor). — HNO_2 (T.15), GBS2. — NaOH, no ppt. — Spectrum: *7.98*, 9.74, 11.71, 14.79 (aq.), last two brands approx. — Dyeing: WCh. — Allied brands: Deep Blue extra R; Violet Moderne [DH].	45
Greenish-black powder; e. s. aq. (deep violet); s. alc. (deep GB and VB); s. conc. H_2SO_4 (B.) — NaOH, no ppt. Spectrum: One-sided absorption. — Dyeing: WCh.	46
Brown black powder; e. s. aq. (opaque, V and VT2); e. s. alc. (VT and VT2); s. conc. H_2SO_4 (BG→). — Ppt. tests: H_2SO_4, – ; NaOH, + (YS1→); Cr, Cu, Ca, – or ±.	50
Iron black cryst. powder; s. h. aq. (pale blueish color); i. c. aq. or alc.; s. conc. H_2SO_4 (←BV Bkn (D)). — HNO_2 (T.15), Y gray (D). — Dyeing: CT ("indigo-blue"); CD (gray).	51

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-BLUE
			ALIZARINE BLUE DNW [M].
52	H_2SO_4...Y–OY, S1. NaOH...V–RV, Bkn (L).	(1) Compl.dis.,10 sec.;air,GBT1. (2) Cotton, BT1; tan., ppt. (3) Wool, VB.	**NEW METHYLENE BLUE NX [C].** "Mixture of Methylene Blue 2B and Methyl Violet."
53	H_2SO_4...GY Bkn (M). NaOH...B Bkn (M).	(1) Dis., compl.; air, RVT1. (2) Cotton, VBS1; tan., ppt. (3) Wool, VB Bkn (M).	**NAPHTHINDONE BB [C].** Safranine-azo-β-naphthol(?).—(1891).
54	H_2SO_4...G Bkn (D). NaOH...BVS1 dull.	(1) Dis., 5 sec.; air, VBS1 sl. dl. (2) Cotton, VBS2; tan., ppt. (3) Wool, VBS1, sl. dull.	**INDAZINE M [C].** Mixture of dimethylphenylsafranine chloride and its dimethylanilido derivative. — (1888).
55	H_2SO_4...BGS1. NaOH...BVS1.	(1) Dis., 15 sec.; air, VB. (2) Cotton, VB–B, T1, sl. dull; tan., ppt. (3) Wool, VB.	**RHODULINE BLUE GG ext. [By].** An azonium salt (?).
56	H_2SO_4...(f) BS2. NaOH...←VRS1.	(1) Dis., 20 sec.; air, VB. (2) Cotton, RV→ Bkn (M); no tan., ppt. (3) Wool, VB.	**IRIS BLUE [B].** Ammonium salt of tetrabromresorufin. — (1880).
57	H_2SO_4...Green gray(M). NaOH...V Bkn (D).	(1) Dis., 5 sec.; air, VB Bkn (M). (2) Cotton, B Bkn (v.D); tan., ppt. (3) Wool, VB Bkn (M).	**METAPHENYLENE BLUE B [C].** Dimethyltolyldiaminotolylphenazonium chloride. — (1888).
			SECTION OF BLUE-VIOLET
58	H_2SO_4...YG Bkn (M). NaOH...Y Bkn (D).	(1) Dis., 1 min.; air, V Bkn (M)+. (2) Cotton, Neut. gray (D); tan., ppt. (3) Wool, BV Bkn (M).	**JANUS BLACK O [M].** Safranine-azo derivative (mixture).
59	H_2SO_4...YG Bkn (M). NaOH...V Bkn (D).	(1) Dis., 30 sec.; air, VR. (2) Cotton, BV Bkn (D); tan., ppt. (3) Wool, BV→Bkn (M).	**JANUS GRAY B [M].** Safranine-azo derivative.
60	H_2SO_4...YG Bkn (M). NaOH...C. gray (M).	(1) Dis., 20 sec.; air, RV. (2) Cotton, B Bkn(D); tan., ppt. (3) Wool, BV Bkn (L and D).	**JANUS GRAY BB [M].** Safranine-azo derivative.
61	H_2SO_4...G–GY, Bkn (D). NaOH...B Bkn (D).	(1) Dis., 30 sec.; air, RV. (2) Cotton, BVS3; tan., ppt. (3) Wool, BVS1.	**INDOIN BLUE R [B].** Safranine-azo-β-naphthol hydrochloride. — (1891).
62	H_2SO_4...G Bkn (L). NaOH...BV, dull.	(1) Dis., 15 sec.; air, BV. (2) Cotton, VBT1 – ; tan., ppt. (3) Wool, BV – →.	**RHODULINE BLUE, R [By].**
63	H_2SO_4...(f) V. NaOH...VR→.	(1) Dis., 10 sec.; air, BV Bkn (M). (2) Cotton, V Bkn (M); tan., ppt. (3) Wool, BV Bkn (M).	**ACETINE BLUE R [B].** Mixture of dianilidoamino-trianilido- and tetraanilido-phenylphenazonuim chlorides. — (1863).
			SECTION OF VIOLET
64	H_2SO_4...R Bkn (D)→. NaOH...RVS1.	(1) OYT2 + dis.; 15 sec.; air, V→. (2) Cotton, BVT1; tan., ppt. (3) Wool, V→.	**FAST NEUTRAL VIOLET B Powder [C].** Dimethylethyldiaminoethylphenazonium chloride. — (1880).
65	H_2SO_4...YO Bkn (D). NaOH...RV Bkn (D).	(1) Dis., 15 sec.; air, V Bkn (M). (2) Cotton, VT2, dull; tan., ppt. (3) Wool, V Bkn (M).	**NEUTRAL BLUE [C].** Dimethylaminophenylphenonaphthazonium chloride. — (1882).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 1168 for description.	
Dark brown powder; e. s. aq. (GB and VB); e. s. alc. (GB and VB); s. conc. H_2SO_4 (VS2). — HNO_3 (T.15), BG Bkn (M). — NaOH, ppt. — Dyeing: CT. — Allied brand: Marine Blue [C].	**52**
Brown-black powder; e. s. aq. (violet); e. s. alc. (BV and VB); s. conc. H_2SO_4 (GY Bkn (D)). — — HNO_2 (T.15), BG Bkn (M). — NaOH, compl. ppt. — Dyeing: CT. — Allied brands: See Indoin Blue R [B], No. 61.	**53**
Brown-black powder; e. s. aq. (BV); e. s. alc. (violet); s. conc. H_2SO_4 (G Bkn (M)). —HNO_3 (T.15), G. gray (M). — NaOH, compl. ppt. — Spectrum: *10.11*, 11.60 weak (aq); 10.32, weak (alc.). — Dyeing: CT. — Allied brand: Indazine [C].	**54**
Grayish-black powder; e. s. aq. (RV); e. s. alc. (VB); s. conc. H_2SO_4 (BG Bkn (M)). —HNO_2 (T.15), C. gray (M). — NaOH, no ppt. — Spectrum: 10.32 (aq.); 10.49 (alc.). — Dyeing: CT.	**55**
Greenish-brown paste; filtered aq. sol. turbid VR w. green fluorescence; s. alc. (B) w. strong R fluor.; s. conc. H_2SO_4 (B). — Does not dissolve in NaOH. — Spectrum: *9.55*, 11.42 (aq.). — HNO_3 (T.15), VBS2. — Dyeing: SS. — Allied brands: Fluorescing or Fluorescent Blue [I] [S]; Resorcine Blue [KS].	**56**
Brownish-black powder; e. s. aq. (intense BV); e. s. alc. (VBS1); s. conc. H_2SO_4 (B Bkn (M)). — HNO_3 (T.15) green gray. — NaOH, compl. ppt. — Spectrum: 10.27 approx. (aq.); 10.30 approx. (alc.). — Dyeing: CT.	**57**
COLORS ON WOOL.	
Dark brown powder; e. s. aq. (dull VB); e. s. alc. (GB); s. conc. H_2SO_4 (GS2). — HNO_3 (T.15), G gray. — NaOH, ppt. — Dyeing: SA, CDv.	**58**
Greenish-black powder; e. s. aq. (intense BV); s. alc. (blue green); s. conc. H_2SO_4 (GYS1). — HNO_3 (T.15), OY Bkn (L) — W. gray. — NaOH, compl. ppt. — Dyeing: SA, CDv.	**59**
Brown-black micro-cryst. powder; e. s. aq. (BS1); s. alc. (dull ←GB); s. conc. H_2SO_4 (G–YG). — HNO_3 (T.15), N gray (D). — NaOH, ppt. — Dyeing: SA, CDV.	**60**
Dark brown powder; e. s. aq. (VS1); e. s. alc. (VB); s. conc. H_2SO_4 (GY Bkn (D)). — HNO_2 (T.15), BG Bkn (D). — NaOH, compl. ppt. — Spectrum: *9.60*, 11.35 (alc.); 12.20 approx. (aq.). — Dyeing: CT, CD. — Allied brands: Indoin Blue R [G]; Vac Blue [H]; Fast Cotton Blue R [O]; Naphthindone [C]; Bengaline [K]; Janus Blue [M]; Indole Blue R [A]; Diazine Blue [K].	**61**
Grayish-black powder; e. s. aq. (RV); e. s. alc. (RV); s. conc. H_2SO_4 (G Bkn (D)). — HNO_2 (T.15), G gray (M). — NaOH, VS2 ppt. — Spectrum: *10.32*, 11.78 approx. (aq.); 10.54 (alc.). — Dyeing: CT.	**62**
Black paste; aq. filtrate RV; s. alc. (BV); s. conc. H_2SO_4 (BV); warmed with $KMnO_4$ sol. gives strong carbylamine odor. — HNO_3 (T.15), V, Bkn (D). — NaOH, compl. VRS2 ppt. — Spectrum: 9.84 approx. (alc.). — Dyeing: Printing. — Allied brands: Induline, Spirit Soluble [H] [B] [By]; Induline 3B and 6B Spirit Soluble; Induline 3B and 6B opal; Fast Blue B, Spirit Sol.; Azine Blue, Spirit Sol. [D]; Indigen D and F [By]; Printing Blue [A] [C] [M].	**63**
COLORS ON WOOL.	
Alm. black, bronzy powder; e. s. aq. (RV–VR); e. s. alc. (RV) w. sl. fluor.; s. conc. H_2SO_4 (dark red gray); NaOH, ± ppt. — Dyeing: CT.	**64**
Dark brown-black powder; e. s. aq. (RV); e. s. alc. (VR) w. sl. red fluor.; s. conc. H_2SO_4 (VR Bkn (M)). — NaOH, ppt. — Spectrum: *11.69*, 9.91 (alc.); 11.25, ill defined, (aq.). — Dyeing: CT.	**65**

No.	**COORDINATION TESTS.** (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF RED-VIOLET
66	H_2SO_4 ... G→. NaOH ... RV.	(1) Dis., 5 sec.; air←RV. (2) Cotton, RVT1; tan., ppt. (3) Wool, RV.	**VIOLAMINE B [M].** **IRIS VIOLET [B].** Tetraethyldiaminophenylphenazonium chloride. — (1883).
67	H_2SO_4 ... GS2, dull. NaOH ... (f) VS2.	(1) Dis., 10 sec.; air, V. (2) Cotton, ←RVT1; tan., ppt. (3) Wool, RV bril.	**RHODULINE HELIOTROPE 3B [By].** Alkylated safranine (?).
68	H_2SO_4 ... W. gray (D). NaOH ... (f) VS2.	(1) Dis., 15 sec.; air, ←RVS1. (2) Cotton, RVT1; tan., ppt. (3) Wool, RV.	**ROSOLAN [P].** Phenyldiaminotolyltolazonium chloride. — (1856).
			SECTION OF GRAY
69	H_2SO_4 ... GY Bkn (M). NaOH ... W. gray (D).	(1) OY Bkn (L) dis., 1 min.; air, alm. compl. ret. (2) Cotton, BG Bkn (M); tan., ppt. (3) Wool, (1) N and (2) W gray (D).	(1) **GRAY DIRECT J [P].** (2) — — **B [P].** Azine Group (?) — (1885).
70	H_2SO_4 ... G Bkn (D). NaOH ... C. gray (v.D).	(1) YOT2 – dis., 2 min.; air, V Bkn (M +). (2) Cotton, BV Bkn (D); tan., ppt. (3) Wool, V gray (M); black.	**JANUS BLACK No. 1 [M].** Probably a mixture of Safranine-azo type.

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 237.	
Gray-black powder; e. s. aq. (←VR); e. s. alc. (VR→) w. sl. red fluor.; s. conc. H_2SO_4 (G–BG). — HNO_3 (T.15), VR Bkn (L). — NaOH, no ppt. — Spectrum: *10.08*, 11.88 (aq.). — Dyeing: SA. — Allied brand: Amethyst Violet [K].	**66**
Black powder; e. s. aq. (VR→); e. s. alc. (violet red); s. conc. H_2SO_4 (YGS2). — HNO_3 (T.15), RV Bkn (M). — NaOH, compl. V ppt. — Dyeing: CT.	**67**
Thick RVS2-black paste; aq. filtrate VRT1; s. alc. (VR→); s. conc. H_2SO_4 (W. gray (D)). — NaOH, compl. ppt. — HNO_3 (T.15), V Bkn (D). — Spectrum: 12.03 approx. (aq.); 11.45 approx. (alc.) — Dyeing: WGS, SA. — Allied brands: Perkin's Violet, Mauve, Mauveïne, etc.; Chrome Violet; (Mauve Dye; Aniline Purple; Indisine; Anileïne; Violeïne).	**68**
COLORS ON WOOL.	
Black powders; s. aq. ((1) neutral gray, (2) B Bkn, (M)); alm. i. alc. ((1) pale gray, (2) dull BT2); s. conc. H_2SO_4 (green-gray). — HNO_3 (T.15), Y Bkn (D). — NaOH, no ppt. — Dyeing: CD. — Allied brands: New Gray [By]; Methylene Gray D, ND, NF [M]; Nigrisine (P); New Methylene Gray [M]; Malta Gray [P].	**69**
Greenish-black powder; e. s. aq. (deep blue); e. s. alc. (GB); s. conc. H_2SO_4 (G). — HNO_3 (T.15), Y Bkn (L). — NaOH, ppt. — Dyeing: SA, CDv.	**70**

DYES OF GENUS I, AZINES,

(COLORS DISCHARGED BY RONGALITE IN TEST 8

DIVISION B.—DYES NOT COLORING COTTON TO A TONE

SUBDIVISION 1.—SOLUBLE IN ONE OR MORE OF THE SOLVENTS

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
			ALIZARINE RUBINOLE R PAT. [By].
			THIOINDIGO RED B PASTE PAT. [K].
71	H_2SO_4...G. bril. NaOH...R-VR, T1. HNO_3...RT1-T2.	(1) Dis., 20 sec.; air, rapid and compl. (2) Cotton, white; no tan., ppt. (3) Wool, VR-R, T1.	**ROSAZINE PASTE [P].** Sodium phenylrosinduline disulphonate. — (1888).
72	H_2SO_4...GS1. NaOH...R Bkn (L). HNO_3...YO Bkn (D).	(1) Compl. dis., 10 sec.; air ret., VRT2. (2) Cotton, alm. white. (3) Wool, VR Bkn (L); RVS3.	**INDULINE WLX [B].**
			SECTION OF RED
73	H_2SO_4...VRS1→. NaOH...BV bril. HNO_3...OR-O, sl. Bkn.	(1) Dis., 10 sec.; air, VR–. (2) Cotton, alm. white (ORT4); no tan. ppt. (3) Wool, ←RT1.	**ARCHIL [AD].** Alkali salts of orcein, prepared from various species of *Rocella*, *Lecanora*, and *Variolaria* (lichens).
			THIOINDIGO SCARLET [K].
74	H_2SO_4...GY Bkn (D). NaOH...RT2. HNO_3...ROT1.	(1) Dis., 30 sec.; air, compl. (2) Cotton, white; no tan. ppt. (3) Wool, RT2.	**ROSINDULINE G [K].** Sodium rosindone-N-monosulphonate. — (1890).
75	H_2SO_4...(f) G→ intense. NaOH...Alm. unchanged. HNO_3...R.	(1) YOT1 dis. 2 min.; air, ½ ret. (2) Cotton, white; no tan. ppt. (3) Wool, (1, 3) ←R, (2) R.	(1) **AZO CARMINE B [B].** (2) **AZO CARMINE R [B].** (3) **ROUGE d'INDULINE [P].** Acid sodium phenylrosindulinetrisulphonate. — (1888, 1890).
76	H_2SO_4...G. NaOH...←RT2. HNO_3...ROT1.	(1) Dis., 10 sec.; air, compl. ret. (2) Cotton, white; no tan. ppt. (3) Wool, ←RT2.	**AZO ORSEILLE BB [C].**
77	H_2SO_4...RVS2→. NaOH...←RV. HNO_3...OR-O, sl. dull.	(1) Dis., 10 sec.; air, VR –. (2) Cotton, alm. white (ORT4); no tan. ppt. (3) Wool, ←R, r. bril.	**CUDBEAR [AD].** Alkali salts of orcein, prepared from the same lichens as cudbear.
			SECTION OF RED-ORANGE
78	H_2SO_4...(f) G Bkn (D). NaOH...RO-OR HNO_3...Unchanged.	(1) YT2-1 dis., 30 sec.; air ret. rapid and alm. compl. (2) Cotton, white; no tan. ppt. (3) Wool, RO-O, v. bril.	**ROSINDULINE 2G [K].** Sodium rosindone-B-monosulphonate. — (1890).

OXAZINES, THIAZINES, ETC.

AND RESTORED BY AIR IN TEST 9.)

AS DEEP AS TINT 2 IN TEST 5. (SEE TEST 12.)

— WATER, ALCOHOL, OR DILUTE AQUEOUS SODIUM HYDROXIDE.

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 1099.	
See No. 123 for description.	
Red paste; s. aq. (deep red); sl. s. alc. (RT1); s. conc. H_2SO_4 (G→). — NaOH, no ppt. —Spectrum: 12.12, 14.34 approx., weak double band (alc.). —Dyeing: WGS. — Allied brand: Azocarmine G Paste (B).	**71**
Black powder; e. s. aq. (V Bkn); sl. s. alc. (V); s. conc. H_2SO_4 (G Bkn). — Ppt. tests: tannin, NaOH, Cu and Ca, all – ; H_2SO_4, ± ; Cr, + compl. — Dyeing: WGS. —Boiled w. dil. alkaline permanganate gives nauseating carbylamine odor.	**72**
COLORS ON WOOL.	
Thin paste (dark purple); e. s. aq. (←R and RT2→); sl. s. alc. (RT1); s. conc. H_2SO_4 (V). — NaOH, no ppt. (red violet sol.) — Wool ORT1 in After-chrome Test 16. — Spectrum: *10.34*, 12.30, 15.27 (aq). — Dyeing: WN, WS, SN, SA. — Allied brands: Paste or Liquor; Orchil; Cudbear (Orseille); (Pourpre Francais).	**73**
See No. 125 for description.	
R powder; e. s. aq. (R→ and RT2); s. alc. (VR–R, T1); s. conc. H_2SO_4 (G–YG Bkn (D)). — NaOH, no ppt. — Spectrum: *14.49*, 12.21 (?) v. weak (aq.). — Dyeing: WGS.	**74**
RS2 powders; e. s. aq. (R→ and RT2); sl. s. alc. (VR–R, T1); s. conc. H_2SO_4 (G→). — NaOH, no ppt. — Spectrum: 14.43, 12.20 approx. (aq.). — Dyeing: WGS. — Allied brand: Rosinduline 2B bluish [K].	**75**
Bright R powder; e. s. aq. (R); e. s. alc. (R–VR, T1); s. conc. H_2SO_4 (G→). — NaOH, no ppt. — Spectrum: *14.50*, 12.11 (?) weak, (aq.). — Dyeing WGS.	**76**
Violet-black powder; s. boiling aq. (R and RT2); s. alc. (VRT1→); s. conc. H_2SO_4 (BV Bkn (L)). — NaOH, no ppt., violet red sol. — Wool RT1 in After-chrome Test 16. — Spectrum: *10.44*; 12.36, 15.17 (aq.). — Dyeing: Same as for Orchil (No. 73).	**77**
COLORS ON WOOL.	
OR powder; e. s. aq. (RO); e. s. alc. (O); s. conc. H_2SO_4 (YGS2, dull). — NaOH, no ppt. — Spectrum: *14.60*, 12.20 (?) (aq.); *14.52*, 12.29, 16.82 (alc.). — Dyeing: WGS.	**78**

No.	**COORDINATION TESTS.** (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF ORANGE-YELLOW
			AURANTIA [Kahlbaum].
79	H_2SO_4...YO Bkn (D) — black. NaOH...YS1-2.	(1) YT3 dis.; air, (1) O Bkn (L) – gray, (2) YO Bkn (L). (2) Cotton, alm. white. (3) Wool, OYS1-2→.	(1) **GAMBINE B [H].** β-Oxynaphthoquinoneoxime (?) — (1889-90). (2) **GAMBINE R [H].** β-Nitroso-α-naphthol-α-naphthoquinoneoxime. — (1875).
			SECTION OF GREEN
			ACID GREEN GG [By].
			COERULEÏNE SW Paste [M].
			SECTION OF BLUE-GREEN
80	H_2SO_4...YO Bkn (D). NaOH...GYS1. HNO_3...YOS1.	(1) ←OYS2 dis., 2 min.; air-ret. alm. compl. (2) Cotton, N gray (L)-white; tan., ± ppt. (compl. when heated). (3) Wool, BGS3; G Bkn (L).	**COERULEÏNE Paste A [M].** A hydroxyquinonic dyestuff made by action of sulphuric ac. on gallein at 200°. — (1871).
81	H_2SO_4...(f) Yo Bkn(D). NaOH...GYS2. HNO_3...YOS1.	(1) OYT1 dis., 15 sec.; air, GS1. (2) Cotton, white or pale neut. gray; no tan. ppt. (3) Wool, BGS2 and S3.	(1) **COERULEINE S Paste [M].** (2) **COERULEINE S Powder [M].** (3) **ALIZARINE GREEN SP #3 (B).** Bisulphite comp. of Coeruleine A. — (1879).
82	H_2SO_4...OYT2-3. NaOH...GB-BG. HNO_3...BGS1 +.	(1) Compl. dis., 1 min.; air ret. BGT1; pers., compl. ret. (2) Cotton, BGT2 –. (3) Wool, BG-GB.	(1) **TETRACYANOLE A [C].** (2) **PATENT BLUE A [M].** Calcium salt of disulphonic ac. of m-oxydiethyldibenzyldiaminotriphenylcarbidride. — (1888).
83	H_2SO_4...OYT2. NaOH...BG-GB. HNO_3...BG.	(1) Dis. 1 min.; air BGT1 or T2· (2) Cotton, white; no tan. ppt· (3) Wool, BG-GB.	(1) **XYLENE BLUE AS [S].** (2) **XYLENE BLUE AS conc. [SS].** (3) **XYLENE BLUE VS [S].** (4) **XYLENE BLUE VS conc. [SS].**
84	H_2SO_4...Y Bkn (D). NaOH...GB.	(1) Compl. dis.; air, ←BGT2+. (2) Cotton, alm. white. (3) Wool, BG→.	**WOOL GREEN SO [B].**
85	H_2SO_4...YT1. NaOH...Unchanged. HNO_3...BG + bril.	(1) Dis. 1 min.; air, abt. ½. ret. (2) Cotton, white; no tan. ppt. (3) Wool, BG-GB, bril.	**KITON BLUE N [I].**
86	H_2SO_4...YT1. NaOH...G-BG, S1. HNO_3...←G sl. dull.	(1) Dis. 1 min.; air, BGT2. (2) Cotton, white; no tan. ppt. (3) Wool, BG-G.	**ALKALI FAST GREEN 3B [By].** A sulphonated triphenylmethane derivative (?).
87	H_2SO_4...GY Bkn (D). NaOH...GBS1.	(1) Dis., 20 sec.; air, BT1+. (2) Cotton, white; no tan. ppt. (3) Wool, BG-GB, sl. dull.	**ACID CYANINE GF [A].**
			ACID ALIZARINE GREEN G [M].
88	H_2SO_4...(f) RV Bkn (D). NaOH...RVS2. HNO_3...OR Bkn (D).	(1) YT2 dis., 10 sec.; air, ←BG dull. (2) Cotton, white; no tan. ppt. (3) Wool, BGS2→ v. dull.	**INDALIZARINE R [DH].** A bisulphite derivative of an oxazine. — (1900).
			SECTION OF GREEN-BLUE
89	H_2SO_4...YOS1. NaOH...GBT1. HNO_3...←YO Bkn (M).	(1) Dis., 15 sec.; air, ½ ret. (2) Cotton, white. (3) Wool, GBT1.	**INDOPHENOL [C].** α-Naphthoquinonedimethyl-p-aminophenylimidine. — (1881).
90	H_2SO_4...OY-Y, T2. NaOH...GB→. HNO_3...BG.	(1) Dis., 45 sec.; air, BGT2.; pers., BT1-2. (2) Cotton, white; no tan. ppt. (3) Wool, GB bril.→.	**XYLENE BLUE BS conc. [SS].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 898 for description.	
GY Bkn (D) paste; sl. s. aq. (YT1); s. alc. (OY); s. conc. H_2SO_4 (O-Y Bkn (M)); e. s. alkali (OY dull, Y and YT2). — Ppt. tests: H_2SO_4, NaOH, Cu (OR Bkn (M)), Cr, Ca, —. Dyeing: WCh (brown); WFe (green). — Allied Brand: (1)Dioxine [L].	**79**
COLORS ON WOOL.	
See No. 258 for description.	
See No. 1153 for description.	
COLORS ON WOOL.	
Black paste; sl. s. alc. (dull YGS2); s. conc. H_2SO_4 (Y Bkn (M)). — NaOH, compl. YGS2 + ppt. No sulphide reaction in Test 4 after 30 sec. — Dyeing: WCh. — Allied brands: Coeruleine in Paste [B] [DH] [By]; Alizarine Green; Anthracene Green.	**80**
(2) Black cryst. powder; (3) brown paste w. strong odor of SO_2; (3) aq. filtrate turbid YS2; (2) s. h. aq. (brown); e. s. alc. (3) (GY), (2) (V-BV Bkn (D)); e. s. H_2SO_4 (Y Bkn (M)). — (3) NaOH, compl. ppt. — Dyeing: WCH. Allied brands: Coeruleine S [B] [By]; Coeruleine SW powder or paste [By]; Alizarine Green; Anthracene Green.	**81**
Indigo blue powder; s. aq. or alc. (GB); s. conc. H_2SO_4 (OYS2). — Ppt. tests: tannin —. — Spectrum: (1) 8.43 (aq.), 8.68 (alc.); (2) 8.42 (aq.), 8.64 (alc.). — Dyeing: SS, WGS.	**82**
VBS2 powders; e. s. aq. (GB→); e. s. alc. (←GB); sl. s. conc. H_2SO_4 (dull YT2). — NaOH, no ppt. — Spectrum: (1) 8.32; (3) 8.29; (4) 8.30 (aq.). — Dyeing: WGS.	**83**
Dark blue powder w. reddish coppery lustre; e. s. aq. (BG bril. and BGT2); e. s. alc. (BG-GB and BGT2); s. conc. H_2SO_4 (YS1). — Ppt. tests: H_2SO_4, + (GS1); NaOH, —; Cr, Cu, and Ca, all — or ±. — Dyeing: WGS.	**84**
VBS2 powder; e. s. aq. (B and ←GB); e. s. alc. (←GB); s. conc. H_2SO_4 (dull YT2). —NaOH, no ppt. — Spectrum: 8.40 (aq.). — Dyeing: WGS.	**85**
G Bkn (v.D) powder; s. aq. (G-BG); s. alc. (G-BG); s. conc. H_2SO_4 (Y). — NaOH, no ppt. (sol. darker.) — Dyeing: WGS.	**86**
Brown-black powder; e. s. aq. (VB); e. s. alc. (←GB); s. conc. H_2SO_4 (G). — Spectrum: *10.46*, 8.46 (aq.). — Dyeing: WGS.	**87**
See No. 1170 for description.	
Olive paste w. strong sulphurous odor; aq. filt. bril. green; s. alc. (YGT2); s. conc. H_2SO_4 (OYS1). — NaOH, no ppt. (intense RV sol.) — Spectrum: 9.60, 10.60 approx., double band (aq.). Dyeing: WCh. — Allied brand: Indalizarine J [DH].	**88**
COLORS ON WOOL.	
Dark brown powder (also sold as paste); alm. i. h. aq.; s. alc. (VB); s. conc. H_2SO_4 (GY). — Spectrum: 9.63 (alc.). — Dyeing: Vat. — Allied brand: Indophenol in Powder [DH].	**89**
VB Bkn (v.D) powder; e s. aq. (deep blue and GB); e. s. alc. (bril. GB); s. conc. H_2SO_4 (OY). — NaOH, no ppt. — Spectrum: 8.92 (aq.). — Dyeing: WGS.	**90**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color (T.5); tannin ppt. (T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			(1) **ERIOGLAUCINE A [G].** (2) **BRIL. INDIGO CARMINE sol. (Lev).**
91	H_2SO_4...GY Bkn (M). NaOH...C. gray (M). HNO_3...G Bkn (M+).	(1) Dis., 20 sec.; air, alm. compl. (2) Cotton, alm. white; no tan. ppt. (3) Wool, GBS1.	**CHROME BLUE B conc. [SS].**
92	H_2SO_4...G. NaOH...GBS2. HNO_3...G Bkn (M).	(1) YT4 dis., 1 min.; air, BT2. (2) Cotton, white; no tan. ppt. (3) Wool, GBS1.	**INDOCHROMOGEN S [S].** Sodium sulphooxyindophenolthiosulphonate. — (1893).
93	H_2SO_4...GS2. NaOH...(f) ←GB, (cl) GBS2. HNO_3...BGS1.	(1) Dis., 20 sec.; air, alm. compl. ret. (2) Cotton, white; no tan. ppt. (3) Wool, GB.	**THIOCARMINE R [C].** Sodium diethyl- (or dimethyl-) dibenzyldiaminophenazthioniumdisulphonate. — (1890).
94	H_2SO_4....(f) VBS2. NaOH...YS2→. HNO_3...G Bkn (M).	(1) YT2 dis., 2 min.; air, BGT1→. (2) Cotton, white; no tan. ppt. (3) Wool, GB.	(1) **INDIGO EXTRACT [B].** (2) **INDIGOTINE A [B].** Sodium indigotinedisulphonate, or the free acid. — (1740).
95	H_2SO_4...(f) V Bkn (D). NaOH...RVS2. HNO_3...O–YO, Bkn (M).	(1) YT3 dis., 10 sec.; air, GBT1. (2) Cotton, alm. white (pale bluish gray); no tan. ppt. (3) Wool, GBS2.	**CHROMOCYANINE V [DH].** Sulphonic acids of leucogallocyanines. — (1898).
			SECTION OF BLUE
96	H_2SO_4...(f) R. NaOH...(f) BV. HNO_3...OYS2.	(1) Dis., 30 sec.; air, GB. (2) Cotton, GBT3; no tan. ppt. (3) Wool, BS1–2.	**ANTHRACENE ACID BLUE GG pat [C].**
97	H_2SO_4...OY–Y, Bkn (D). NaOH...RV Bkn (D). HNO_3...GY Bkn (M).	(1) Dis., 10 sec.; air-ret., abt. ½. (2) Cotton, alm. white to C. gray (L); no tan. ppt. (3) Wool, B Bkn (M)–Gray.	**WOOL GRAY G [M].** Salt of a sulphonated azine (?).
			INDIGOES.
98	H_2SO_4...G. NaOH...R–VR, dull. HNO_3...←GBS1.	(1) YOT2 dis., 20 sec.; air ret., rapid and compl. (2) Cotton, white; no tan. ppt. (3) Wool, (1) B, (2) B→.	(1) **WOOL FAST BLUE GL [By].** (2) **WOOL FAST BLUE BL [By].**
99	H_2SO_4...GS1. NaOH...GB, dull. HNO_3...BG–B, Bkn (D).	(1) Dis., 10 sec.; air BT1. (2) Cotton, alm. white; no tan. ppt. (3) Wool, BT1.	**URANIA BLUE [D].** Thiazine dyestuff. — (1896).
100	H_2SO_4...G. NaOH...VB, dull. HNO_3...V Bkn (D).	(1) Dis., 15 sec.; air, compl. ret. (2) Cotton, white; no tan. ppt. (3) Wool, BT1+.	**ACID CYANINE BF [A].**
101	H_2SO_4...G. NaOH...RVS1. HNO_3...BV Bkn (M).	(1) OYT2 dis., air, compl. ret. (2) Cotton, alm. white; no tan. ppt. (3) Wool, BS1.	(1) **INDOCYANINE B [A].** (2) **INDOCYANINE BF [A].**
102	H_2SO_4...GS1. NaOH...RVS1. HNO_3...←GBS1.	(1) Dis., 2 sec.; air, compl. ret. (2) Cotton, BT3+, dull no tan. ppt. (3) Wool, BT1+.	**FRAM BLUE G [By].**
			INDIGO BROMINATED RB [B].
103	H_2SO_4...BGT1. NaOH...VB–B, T1, dull. HNO_3...←OYT1.	(1) Dis., 10 sec.; air ret., ½, rapid. (2) Cotton, white; no tan. ppt. (3) Wool, BT1–.	**ANTHRACENE CHROME BLUE FD [C].**
104	H_2SO_4...GBS2. NaOH...RVS2. HNO_3...Green gray.	(1) Alm. compl. dis., 20 sec.; air, compl. ret. (2) Cotton, BT2–; no tan. ppt. (3) Wool, ←BT1-2, dull.	**FAST BLUE 6B FOR WOOL [A].** Mixtures of sodium sulphonates of various spirit soluble indulines. — (1867).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
See No. 287 for description.	
Black powder; i. c. aq.; s. h. aq.(pale broken green); i. c. alc.; s. conc. H_2SO_4 (YOS1). —Spectrum: Ill-defined absorption at abt. 10.0 (aq.). — Dyeing: WCh.	**91**
Blue-black powder; e. s. aq. (VR Bkn (v.D) and ←R Bkn (L)); s. alc. (VR Bkn (M)); s. conc. H_2SO_4 (GY). — NaOH, no ppt. — Spectrum: No characteristic absorption. — Dyeing: CCh.	**92**
RVS2 powder; e. s. aq. (deep blue and GB); s. alc. (GB-BG); s. conc. H_2SO_4 (←G). — NaOH, no ppt. — Spectrum: 7.56 (aq.). — Dyeing: WGS, SS.	**93**
(1) Blue-black paste; (2) V-black powder; (food color sanctioned by U. S. Pure Food Law); s. alc. (GBT1); aq. sol. (B, GB and GBT2); s. conc. H_2SO_4 (BV). — NaOH, no ppt. (GY→ sol.). — Spectrum: (1), 9.13; (2), 9.14 (aq.). (1), 9.38; (2), 9.36 (alc.). — Dyeing: WGS. — Allied brand: Indigo Carmine [B].	**94**
Greenish-brown paste; s. h. aq. (blue); sl. s. alc. (BGT2); s. conc. H_2SO_4 (GYS2). — NaOH, no ppt. (intense V→ sol.). — Spectrum: 8.04 (aq.). — Dyeing: Printing, CCh. — Allied brands: Chromocyanine B.; Blue PRC; Rhine Blue; Bril. Gallocyanine (DH).	**95**
COLORS ON WOOL.	
Violet-black powder; e. s. aq. (deep blue and GB); e. s. alc. (VB and BT1); s. conc. H_2SO_4 (←RT1). — NaOH, no ppt. — Spectrum: 7.75 (aq.); 10.14, approx., (alc.). — Dyeing: WGSCh.	**96**
Black powder; s. h. aq. (alm. opaque blue-violet); s. alc. (B Bkn (M)); s. conc. H_2SO_4 (Y Bkn (D)). — Dyeing: WGS.— Allied brand: Wool Gray B and R (M).	**97**
See Nos. 127, 128 and 129 among the vat dyestuffs.	
(1) Violet-black powder; (2) RVS3 powder; s. aq. (1) (VB and BVT2), (2) (BV and BVT2); e. s. alc. (1) (blue), (2) (violet-blue); both s. conc. H_2SO_4 (G→). — NaOH, no ppt., intense ←R sol. — Spectrum: (1) 10.57 (aq.), approx. — Dyeing: WA.	**98**
Violet-black powder; e. s. aq. (deep VB); s. alc. (B and VB); s. conc. H_2SO_4 (←BG Bkn (M)). — NaOH, no ppt. — Spectrum: 9.60, 10.60 (aq.), approx. (double band). — Dyeing: WGS, SS.	**99**
Violet-black powder; e. s. aq. (BV); s. alc. (BV); s. conc. H_2SO_4 (G→). — NaOH; no ppt. — Dyeing: WGS.	**100**
Black powders; e. s. aq. (deep BV); s. alc. (deep blue) w. red fluor.; s. conc. H_2SO_4 (G→). — NaOH: no ppt. (deep VR sol.). — Spectrum: 11.27 (aq.), broad and weak. —Dyeing: WA.	**101**
Dark red-brown cryst. powder w. met. reflections; e. s. aq. (deep VB and B); e. s. alc. (deep VB); s. conc. H_2SO_4 (G). — NaOH: compl. ppt. — Dyeing: WGS.	**102**
See No. 132 among the vat dyestuffs.	
Violet-black powder; e. s. aq. (VB and GB); e. s. alc. (B and VB); s. conc. H_2SO_4 (GBS1). — NaOH: no ppt. — Dyeing: WGSCh.	**103**
Black powder; e. s. aq. (VBS1 and BT2); s. alc. (GB and BS1); s. conc. H_2SO_4 (GBS1). — NaOH, no ppt, (deep RV sol.). — Allied brands: Fast Blue R, 3R, B, 6B [C], [B] [t'M) [G] [O]; Induline Soluble; Induline R, B, 3B, 6B [B] [By] [CR]. — Dyeing: WGS.	**104**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
105	H_2SO_4...BS2. NaOH...VS1. HNO_3...YO Bkn (M).	(1) Dis., 15 sec; air, alm. compl. ret. (2) Cotton, BVT3; tan., ppt. s. in excess of reagent. (3) Wool, BT1+.	**CELESTINE BLUE B (By).** Carbonic amide of diethylaminodioxyphenoxazonium chloride. — (1893).
106	H_2SO_4...BS2. NaOH...BVS2. HNO_3...YOS1-2.	(1) Dis., 10 sec.; air, ⅔ ret. (2) Cotton, white; no tan. ppt. (3) Wool, B-BS1.	**PHENOCYANINE TV (DH).** Sulphonic acid of diethylaminooxyphenoxazoneoxyphenyl ether. — (1893-4).
107	H_2SO_4...(f) VBS1, dull. NaOH...RVS1. HNO_3...Y Bkn (M+).	(1) Dis., 15 sec.; air ret., abt. ⅔. (2) Cotton, BVT3 dull.; no tan. ppt. (3) Wool, BS2→.	**CHROME BLUE R conc. (SS).**
108	H_2SO_4...RVS2. NaOH...VBS1. HNO_3...OY Bkn (M).	(1) Dis., 10 sec.; air, BT2-1. (2) Cotton, white; no tan. ppt. (3) Wool, BT1+.	**COREINE AR [DH].** Made by action of aniline on coreine 2R and sulphonation. — (1894).
109	H_2SO_4...RVS2. NaOH...RVS1. HNO_3...YO Bkn (M).	(1) Dis., 10 sec.; air, GBT1 dull. (2) Cotton, BT3; no tan. ppt. (3) Wool, ←BT1 sl. dull.	**GALLAMINE BLUE powder [G].** Amide of dimethylphenoxazonecarbonic acid. — (1889).
			SECTION OF VIOLET-BLUE
110	H_2SO_4...R Bkn (M). NaOH...V→. HNO_3...OY Bkn (M+).	(1) Dis., 20 sec.; air, BT1−. (2) Cotton, white; no tan. ppt. (3) Wool, VB−.	**GALLOPHENINE P powder [By].** An oxazine derivative (?).
			INDIGOES.
111	H_2SO_4...G→ bril. NaOH...VRS1. HNO_3...V Bkn (D+).	(1) OYT2 dis., 15 sec.; air ret., ⅔. (2) Cotton, alm. white; no tan. ppt. (3) Wool, VBS1.	**INDOCYANINE 2R [A].**
112	H_2SO_4...G. NaOH...BG Bkn (D). HNO_3...G Bkn (M).	(1) Dis., 1 min.; air, BT2. (2) Cotton, alm. white; no tan. ppt. (3) Wool, VB.	**BRILLIANT ALIZARINE BLUE B (Lev).** Probably a thiazine derivative.
113	H_2SO_4...(f) BGS1. NaOH...B Bkn (D). HNO_3...GBS2.	(1) YT dis., 20 sec.; air ret. rapid and compl. (2) Cotton, white; no tan. ppt. (3) Wool, VBS1.	**NAPHTHAZINE BLUE [M].** Sodium dimethyl-β-naphthyldiamino-β-naphthylphenazoniumdisulphonate. — (1892).
114	H_2SO_4...BS2. NaOH...BS2. HNO_3...GY Bkn (M).	(1) YT dis., 1 min.; air ret., good. (2) Cotton, BT2−; no tan. ppt. (3) Wool, VBS1.	**BRILLIANT ALIZARINE BLUE 3R pat. [By].** Probably a thiazine derivative.
115	H_2SO_4...B Bkn (D). NaOH...RVS2. HNO_3...Bluish gray (v.D).	(1) OYT2 dis., 15 sec.; air ret. alm. compl. (2) Cotton, BT3 − dull.; no tan. ppt. (3) Wool, VB Bkn (M).	**NIGROSINE G [By].** Probably salt of sulphonated induline.
			SECTION OF BLUE-VIOLET
116	H_2SO_4...(f) VR. NaOH...(f) RV. HNO_3...←OY sl. dull.	(1) Dis., 15 sec.; air ret., compl. (2) Cotton, alm. white; no tan. ppt. (3) Wool, BV-S1→.	**DELPHINE BLUE B (S).** Ammonium dimethylphenyldiamino-oxyphenoxazonesulphonate. — (1889).
117	H_2SO_4...G. bril. NaOH...BV Bkn (D). HNO_3...BGS1.	(1) Dis., 40 sec.; air ret., abt. ⅓. (2) Cotton, BT3; no tan. ppt. (3) Wool, BVS2.	(1) **BRILLIANT ALIZARINE BLUE G (By), powder.** (2) **BRILLIANT ALIZARINE BLUE G [By], paste.** Thiazine derivative.
118	H_2SO_4...B Bkn (L). — C. gray. NaOH...RV Bkn (L). HNO_3...G gray (M).	(1) Compl. dis., 10 sec.; air ret., BT2+. (2) Cotton, alm. white. (3) Wool, BVT2 sl. dull; VBS2.	**INDULINE BE [P].**
			ALIZARINE INDIGO BLUE S (B).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
G Bkn (D) powder; e. s. aq. (VB and B); e. s. alc. (B and VB); s. conc. H_2SO_4 (B). — NaOH, ± ppt. — Spectrum: *7.95*, 9.74, 11.78 (aq.). — Dyeing: WCh. Allied brand: Coreine RR [DH].	**105**
Violet-black powder; e. s. aq. (B and GB); e. s. alc. (B and VB); s. conc. H_2SO_4 (dull GB). — NaOH; no ppt. — Spectrum: 8.04, 9.81 (aq.), weak double band. — Dyeing: WCh.	**106**
Dull black powder; e. s. aq. (VB and B); s. alc. (GB and B); s. conc. H_2SO_4 (←BV). — NaOH, no ppt. (deep RV sol.) — Spectrum: *8.58* (aq.).	**107**
Purplish-black powder; e. s. aq. (VB and GB); e. s. alc. (VB); s. conc. H_2SO_4 (RV). — NaOH, no ppt. — Spectrum: 8.03 (aq.). — Dyeing: WCh. — Allied brand: Coreine AB [DH].	**108**
Black powder; e. s. h. aq. (blue and VB); alm. i. alc.; s. conc. H_2SO_4 (V and RVS1→). — NaOH, no ppt. (deep RV sol.). — Spectrum: 7.97 (aq.). — Dyeing: WCh. — Allied brand: Gallamine Blue powd. [By].	**109**
COLORS ON WOOL.	
Black powder; e. s. aq. (VB and BT1); sl. s. alc. (red violet); s. conc. H_2SO_4 (←R). — NaOH, no ppt. (deep RV sol.). — Spectrum: 10.64 approx. (aq.); 11.19 approx. (alc.). — Dyeing: Printing (WCr.).	**110**
See No. 128 among the vat dyestuffs.	
Violet-black powder; e. s. aq. (V and RVT2); e. s. alc. (VB) w. red fluor.; s. conc. H_2SO_4 (G). — NaOH: no ppt. (deep RV→ sol.) — Dyeing: WA.	**111**
Black cryst. powder; e. s. aq. (B and BT2); e. s. alc. (BV); s. conc. H_2SO_4 (G→). — NaOH, no ppt. — Dyeing: WCh.	**112**
Violet-black powder; e. s. aq. (VB→); e. s. alc. (←VB); s. conc. H_2SO_4 (BGS1). — NaOH, no ppt. — Dyeing: WGS. — Allied brand: Naphthazine Blue (D).	**113**
Brown-black powder; e. s. aq. (VB and B); e. s. alc. (BV) w. sl. reddish fluor.; s. conc. H_2SO_4 (←BGS1). NaOH, no ppt. — Dyeing: WCh.	**114**
Black cryst. powder; e. s. aq. (v. dull. VB); i. alc.; s. conc. H_2SO_4 (B Bkn (D)). — NaOH, no ppt. — Dyeing: WGS.	**115**
COLORS ON WOOL.	
Dark brown powder or paste; e. s. aq. (deep BV); s. alc. (RV); s. conc. H_2SO_4 (VR). — NaOH, no ppt. (dark VR sol.). — Dyeing: WCh.	**116**
(1) RV-black powder; e. s. aq. (BV); i. alc.; s. conc. H_2SO_4 (G→). (2) Dark brown paste; s. aq. (deep blue violet); s. alc. (BV–V); s. conc. H_2SO_4 (G→). — NaOH, no ppt. — Gives Test 4. — — Dyeing: WCh. — Allied brands: Brilliant Alizarine Blue R [By]; Indochromine T [S].	**117**
Black powder; e. s. aq. (BV and BVT2); sl. s. alc. (B); s. conc. H_2SO_4 (B dull). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, +. — Boiled w. dil. alkaline permanganate gives nauseating carbylamine odor. — Dyeing: WGS.	**118**
See No. 1170 for description.	

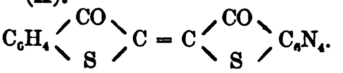
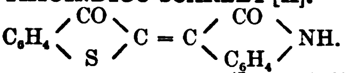
No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 9. — (2) Cotton color(T.5); tannin ppt.(T.18c.) — (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction
			SECTION OF VIOLET
120	H_2SO_4...BGS2. NaOH...RV Bkn (D). HNO_3...W. gray (v.D).	(1) Dis., 2 min.; air ret., abt. ⅔. (2) Cotton, alm. white; no tan. ppt. (3) Wool, V Bkn (M–D).	**NIGROSINE crystals 144 [K].** Salt of sulphonated indulines (?).
121	H_2SO_4...BGS1. NaOH...R Bkn (L). HNO_3...W gray (D).	(1) Compl. dis., 10 sec.; air ret., ←VT2 +. (2) Cotton, alm. white. (3) Wool, V Bkn (M); VS3.	**INDULINE BAC [By].**
			SECTION OF GRAY
122	H_2SO_4...G Bkn (M); BGS1→. NaOH...RV Bkn (L) — gray.	(1) YT3 dis.; air, V Bkn (L). (2) Cotton, C gray (L); alm. white. (3) Wool, C gray (M+); BV Bkn (D).	**NIGROSINE BL Powder [B].**
123	H_2SO_4...(f) GBT1, dull NaOH...N gray (v.D).	(1) G gray (L) dis.; air ret. compl. (2) Cotton, C gray (v.L), uneven. (3) Wool, C gray (D).	**VARNISH BLACK B [B].**
124	H_2SO_4...(f) C–G gray (L). NaOH...W gray (D).	(1) GY Bkn (M) dis.; air ret., abt. ½. (2) Cotton, C gray (L). (3) Wool, N gray (D).	**NIGROSINE SPIRIT N [B].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Black cryst. powder; e. s. aq. (Violet black); i. alc.; s. conc. H_2SO_4 (BG Bkn (M)). — NaOH, no ppt. (dark warm gray sol.) — Dyeing: WGS.	**120**
Black powder; e. s. aq. (VB dull and VBT2 dull); sl. s. alc. (VR); s. conc. H_2SO_4 (B Bkn). — Ppt. tests: tannin, NaOH and Cu, all –; H_2SO_4, ±; Cr, + compl. — Boiled w. dil. alkaline permanganate gives nauseating carbylamine odor. — Dyeing: WGS.	**121**
COLORS ON WOOL.	
Black cryst. powder; e. s. aq. (opaque, VBS2); v. sl. s. alc. (VB Bkn (L)); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**122**
Brown black powder; i. aq.; i. NaOH; e. s. alc. (opaque, BVS2 and BVT2); s. conc. H_2SO_4 (B Bkn (D)). — Warmed w. dil. alk. permanganate gives nauseating carbylamine odor.	**123**
Black cryst. powder; i. aq.; i. NaOH; e. s. alc. (opaque, B Bkn (D and L); s. conc. H_2SO_4 (B Bkn (M)). — Warmed w. dil. alk. permanganate gives nauseating carbylamine odor.	**124**

DYES OF GENUS I,

DIVISION B,

(COMPRISING COLORS WHICH ARE INSOLUBLE BY TEST 3 IN COLD WATER, ALCOHOL, OR DILUTE TEST 5; AND WHICH WHEN DYED UPON COTTON BY THE METHOD OF TEST 6 ARE DIS-

No.	COORD. SEQUENCE. (1) Cotton color, vat dyed (T.6). (2) H_2SO_4 (T.13) on vat dyed cotton.	(1) Rongalite discharge on vat dyed cotton (T.11a). (2) Color of hydrosulphite vat in T.6.	Trade name. Constitutional name. Date of discovery or introduction.
125	Cotton, VRT1. H_2SO_4 ...(f) GS2.	(1) Compl. dis., 1 min.; air, compl. ret. (2) Vat. Y.	**THIOINDIGO RED B Paste pat.** (K).  $C_6H_4\begin{smallmatrix}\diagup & CO & \diagdown\\ \diagdown & S & \diagup\end{smallmatrix}C=C\begin{smallmatrix}\diagup & CO & \diagdown\\ \diagdown & S & \diagup\end{smallmatrix}C_6N_4.$ — (1906).
126	Cotton, VR bril. H_2SO_4 ...(cl) RVS1, (Sol. GT1).	(1) YT1 dis. (3 min.); O Bkn (M), (2 min.); air, compl. slow ret. (2) Vat, yellowish.	**HELIDON RED 3B [M].**
127	Cotton, ←ORT2. H_2SO_4, (f) OY Bkn (L); (cl) alm. unchanged.	(1) YT2 dis. (1 min.); air, compl. ret. (2) Vat., yellow.	**THIOINDIGO SCARLET [K].**  $C_6H_4\begin{smallmatrix}\diagup & CO & \diagdown\\ \diagdown & S & \diagup\end{smallmatrix}C=C\begin{smallmatrix}\diagup & CO & \diagdown\\ \diagdown & C_6H_4 & \diagup\end{smallmatrix}NH.$ (Intro. 1907).
128	Cotton, ORT2. H_2SO_4, (f) G Bkn to gray.	(1) Compl. dis. (40 sec.); air, compl. ret. (2) Vat, YT1.	**CIBA RED pat. [I].**
129	Cotton, GB sl. dull. H_2SO_4, (cl) YG after 1 min.	(1) GS2 dis. (2 min.); GY (4 min.); air, compl. ret. (2) Vat, YG, opaque.	**INDIGO Paste G [B].** A chlorinated indigo.
130	Cotton, B Bkn (M+). H_2SO_4, (f) YGS2.	(1) YGT1 to compl. dis. (3 min.); air, compl. ret. (2) Vat, Y.	(1) **INDIGO J** (B). (2) **INDIGO MLB [M].** (3) **INDIGO B Powder [B].** (4) **INDIGO R Powder [B].** (5) **NATURAL INDIGO.** (1) and (2) are synthetic indigoes.
131	Cotton, BS2. H_2SO_4, (f) GS2.	(1) GS2 dis. (2 min.); GY (4 min.); air, compl. ret. (2) Vat, YS2.	**INDIGO BROMINATED R [B].** A brominated indigo.
132	Cotton, BS2. H_2SO_4, (f) BGS2.	(1) GS2 dis. (2 min.); YG (4 min.); air. compl. ret. (2) Vat, YOS1→.	**INDIGO BROMINATED RB [B].**
133	Cotton, BS1+. H_2SO_4, (f) ←GBS2.	(1) GYS2 (2 min.); Y (3 min.). (2) Vat, Y Bkn (v.D).	**DIANTHRENE BLUE 2B, 51% paste [Klp].**
134	Cotton, BS1→. H_2SO_4, (f) GBS2.	(1) YGS2 (2 min.); Y (3 min.); air, compl. ret. (2) Vat, ←YO.	**BROM INDIGO FB Powder [By].**
135	Cotton, BV→. H_2SO_4, (f) BGS1→.	(1) YT1→ (2 min.); air, violet gray ret. (2) Vat, OY.	**CIBA VIOLET pat. [I].**

HYDROSULPHITE VAT COLORS OF

SUBDIVISION 2.

ALKALI; WHICH DO NOT COLOR COTTON DIRECTLY TO A UNIFORM TONE AS DEEP AS TINT 2 IN CHARGED BY RONGALITE AND THEN RESTORED BY AIR UNDER THE CONDITIONS OF TEST 11a.)

Color on direct dyed wool (T.5). Appearance (T.2). Solutions (T.3). Spectra (T.22). Sulphide Test (T.4). Spectra. Names of alleged identical or closely allied dyestuffs.	No.
Wool d., VR–R, T1; wool v. VR–R. — ←R paste; i. aq. or alkali; s. alc. (VRT3); s. dil. $CHCl_3$ (←RT bril. w. yel. fluor.); s. conc. H_2SO_4 (BG); dried powder may be sublimed like indigo. — Sulphide test, +.	**125**
Wool d., VRT1; wool v., VR–R, dull. — VRS3 paste; i. aq. and alc.; i. alkali or acid; s. conc. H_2SO_4 (G). — Sulphide test, – (± after 30 sec.).	**126**
Wool d. or v., VRT →. — OR paste; i. aq.; alc. filtrate (RT4); s. $CHCl_3$ (pale ORT1, not fluor); s. conc. H_2SO_4 (YO Bkn); dried powder sublimes when heated. — Sulphide test, –.	**127**
Wool d., ROT2 — (besmeared.) — Dull red powder; i. aq., alkali or alc.; s. conc. H_2SO_4 (G Bkn). — Sulphide test, – (after 30 sec.).	**128**
Wool d., ←B Bkn (D); wool v., GBS1. — Dark violet-blue paste; aq. filtrate blue; s. conc. H_2SO_4 (BGS1). — Sulphide test, – (after 30 sec.). — Spectrum: 9.18 (Chlf.). —[Chlorine Blue T (B), is an earlier name for this color.]	**129**
Wool d., (1, 2, 4) VB Bkn (D); (3) C gray (D). — (1, 3, 6) BVS3 powder, (2) or paste; i. aq., alc., dil. acid and alkali; s. conc. H_2SO_4 (YS2 changes slowly to BGS1); dry powd. sublimes in heated test tube w. purple vapor and gives bril. coppery red streak when rubbed on rough porcelain. — Sulphide test: – . — Spectrum: (2) 9.36 (Chlf.).	**130**
Wool d., B Bkn (M)–C gray; wool v., BS1→. — Dark violet-blue paste; i. aq.; alc. filtrate (BT2); s. conc. H_2SO_4 (←GYS2 changing to ←BGS1). — Sulphide test, + (15 sec.). — Spectra: 9.34 (Chlf.).	**131**
Wool d., B Bkn (M)–C gray; wool v., VBS2. — Blue black paste; i. aq. or NaOH; alm. i. alc. (GBT2); s. conc. H_2SO_4 G Bkn (D). — Sulphide test, + (10 sec.).	**132**
Wool d., BT2 dull; wool v., BT1 sl. dull. — Dark purplish paste; i. aq. or alc.; s. conc. H_2SO_4 (BG→). — Sulphide test, – (30 sec.).	**133**
Wool d., BGT1; wool v., BT1 sl. dull. — Red black powder; aq. filtrate (GBT2 –); alc. filtrate (GB); s. conc. H_2SO_4 (GB–BG). — Sulphide test, – (30 sec.).	**134**
Wool d., white; wool v., RV–VR. — RVS1 powder; i. aq., alkali or alc; s. conc. H_2SO_4 (GB–BG). — Sulphide test, – (30 sec.).	**135**

DYES OF GENUS II, TRIPHENYL–

(COLORS DISCHARGED BY RONGALITE AND RESTORED

DIVISION A. — DYES COLORING COTTON TO

No.	COORDINATION TESTS. (1) Fluorescence of alc. sol. (T.17).[*] (2) H_2SO_4 (T.13). (3) NaOH (T.14). (4) HNO_2 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET RED
136	Yellowish fluor. H_2SO_4 ...YO Bkn (M). NaOH...VRT3+.	(1) ORT3 dis., 2 min.; pers., alm. compl. ret. (2) Cotton, ←RT2; tan., ppt. (3) Wool, VRT2+, sl. dull.	**PYRONINE G [L].** Tetramethyldiaminoxanthenyl chloride. — (1889).
137	Yellowish fluor. H_2SO_4 ...OYT1. NaOH...ORT3.	(1) Alm. compl. dis., 2 min.; pers. ret. alm. compl. (2) Cotton, ←RT2; tan., ppt. (3) Wool, VRT2+, sl. dull.	**PYRONINE B [L].** Tetraethyldiaminoxanthenyl chloride. – (1889).
138	H_2SO_4 ...OY Bkn (D). NaOH...VRT1. HNO_2 ...OYT1.	(1) Dis., 30 sec.; pers., RVT1+. (2) Cotton, ←VR–; tan., ppt. (3) Wool, VR.	(1) **ETHYL PURPLE 5R [B].** (2) **METHYL VIOLET 3R Extra [B].** Alkyl rosaniline salts (?).
139	H_2SO_4 ...OY Bkn (D). NaOH...VRT3. HNO_2 ...OYT1.	(1) Dis., 10 sec.; pers., VRT2. (2) Cotton, VRT1; tan., ppt. (3) Wool, VR→.	(1) **FUCHSINE [B].** (2) **FUCHSINE 76712 J [C].** (3) **MAGENTA DR [M].** (4) **RUBINE [A].** Mixture of triparaaminotriphenylcarbidride and triparaaminometatolyldiphenylcarbidride hydrochlorides or acetates. — (1859).
140	As for No. 138 above.	(1) Dis., 10 sec.; pers., VRT2. (2) Cotton, VRT1→; tan., ppt. (3) Wool, VR–R.	**PARA FUCHSINE [K].** Triaminotriphenylcarbidride hydrochloride. — (1858).
141	H_2SO_4 ...OY. NaOH...YO. HNO_2 ...OYT1.	(1) Dis., 70 sec.; pers., VRT2. (2) Cotton, ←VRT1; tan., ppt. (3) Wool, VR, bril.	**BRILLIANT RHODULINE PURPLE R [By].**
			SECTION OF RED
142	H_2SO_4 ...YOT1. NaOH...O Bkn (L). HNO_2 ...←YOT1.	(1) Dis., 20 sec.; pers. ret. alm. compl.; sl. air ret. (2) Cotton, RT2; tan., ppt. (3) Wool, ←RT2 sl. dull.	**ACRIDINE RED 3B [L].** Salt of a basic alkylated pyronine derivative (?). — (1891).
			BAYER RHODAMINE SG (By).
143	H_2SO_4 ...OYT1. NaOH...Rapid dis. to OT4. HNO_2 ...(1) ROT1, dull; (2) OT1→ duil.	(1) Dis., 2 min.; pers. ret., abt. ⅓. (2) Cotton, ←RT2; tan., ppt. (3) Wool, ←RT1 bril.	(1) **RHODAMINE S [B].** (2) — — [By]. (1) Dimethyl- or diethyl-m-aminophenolsuccïneine hydrochloride or zinc double chloride. — (1888). **RHODAMINES.**

---

[*] Fluorescence is not used as a coördinating test *except in the Section of VR colors*, in which

METHANE DERIVATIVES, ETC.

BY POTASSIUM PERSULPHATE IN TESTS 8 AND 10)

TINT 2 OR A DEEPER TONE IN TEST 5.

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Brownish-black powder; e. s. aq. (OR), and in alc. (VR–R, T1) w. yel. fluor.; s. conc. H_2SO_4 (OY) w. sl. greenish fluor. — HNO_3 (T.15): OR Bkn (L). — NaOH: ± ppt., RT2 sol., no fluor. — Dyeing: WGS, SS, CT. — Allied brands: Pyronine G [SB] [By]; Casan Pink [Gerber].	**136**
Dark brown powder; e. s. aq. (OR and ←RT2) w. yel. fluor.; e. s. alc. (VR–R, T1) w. yel. fluor.; s. conc. H_2SO_4 (Y→) w. sl. greenish fluor. — HNO_3 (T.15): ROT1, dull. — NaOH: ± ppt., OYT1 non-fluor. sol. — Spectrum: *11.80*, 13.97 (aq.). — Dyeing: WGS, SS, CT. — Allied brand: Pyronine B [SB] [By].	**137**
YG–G, S2 cryst. powder, w. met. lustre; e. s. aq. (R and VRT1); e. s. alc. (R–VR); s. conc. H_2SO_4 (OY). — NaOH: ORS1 ppt. — Dyeing: WG, SA, CT.	**138**
GS2 cryst. w. cantharides lustre; e. s. aq. (←OR and VRT1); e. s. alc. (R–VR); e. s. conc. H_2SO_4 (OY). — NaOH: compl. ppt.; colorless sol. — Spectrum: *11.85*, 15.40 (aq.). — Dyeing: WG, SS, CT. — Allied brands: Fuchsine [By] [C] [L] [D] [K] [DH] [M] [O] [etc.]; Magenta [H] [Sch] [etc.]; Brilliant Fuchsine [O]; Aniline Red, etc. (Azeleine, Solferino, Erythrobenzin, Fuchsiacine, Harmaline, Rubianite, are obsolete names). Among the impure varieties containing phosphine are: Cerise [B] [C] [DH]; Geranium [C]; Grenadine [O]; Camelia; Russian Red; Fuchsine Scarlet; Fuchsine, yellowish; Fuchsine Ponceau, etc.	**139**
GS2 cryst. w. cantharides-like lustre; e. s. aq. (←OR and VRT1); e. s. alc. (R–VR); s. conc. H_2SO_4 (OY). — NaOH: compl. ppt., colorless sol. — Dyeing: WG, SS, CT. — Allied brand: Para Magenta [H].	**140**
RV Bkn (D) powder; e. s. h. aq. (R and RVT2); e. s. alc. (VR–R); s. conc. H_2SO_4 (OY). — NaOH; compl. ppt. (O). — Spectrum: *11.09*, 14.94 (aq.). — Dyeing: CT.	**141**
COLORS ON WOOL.	
Dull YGS3 powder containing green cryst. w. met. lustre; e. s. aq. (OR–ORT1 and RT2) w. strong yel. fluor.; e. s. alc. (RT2) w. *strong yel. fluor.;* s. conc. H_2SO_4 (OY→) w. sl. green. fluor. — NaOH: no ppt., ORT4 sol. — Dyeing: CT. — Allied brands: Acridine Red B, BB [L] [SB].	**142**
See No. 1000 for description.	
(1) G Bkn (v.D) powder, (2) G gray (D) powder; e. s. aq. (R→ and RT2), w. yel. fluor.; e. s. alc. (RT1+) w. *strong yel. fluor.;* s. conc. H_2SO_4 (OY→) w. greenish fluor. — NaOH: no ppt.; paler sol. — Dyeing: WGS, SS. — Allied brand: Rhodamine S [I] [By].	**143**
See Nos. 1001 and 1002 for descriptions.	

Nos. 135 and 136 are the only dyestuffs that give fluorescent alcoholic solutions.

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF RED-ORANGE
			ACRIDINE RED B [L].
144	H_2SO_4...OY. NaOH...OT3. HNO_3...OYT1.	(1) Dis., 1 min.; pers., ORT3; air ret. v. sl. (2) Cotton, ROT2; tan., ppt. (3) Wool, ROT2.	**RHODAMINE SCARLET G [By].**
			SECTION OF ORANGE
			FLAVOPHOSPHINE R conc. New [M].
			ACRIDINE RED BB [L].
			SECTION OF YELLOW-ORANGE
145	H_2SO_4...R Bkn (v.D). NaOH...YO–O. HNO_2...YO.	(1) Dis., 20 sec.; pers., OYT1. (2) Cotton, ROT2; no tan. ppt. (3) Wool, ←YO−.	**CHLORANTINE ORANGE TRR [I].** Azo dyestuff.
			INDIAN YELLOW J [H].
146	H_2SO_4...(f) YO Bkn (D). NaOH...YO. HNO_2...YO.	(1) YT3 dis., 2 min.; pers. ret., ½. (2) Cotton, YO–OY; no tan. ppt. (3) Wool, YO.	**CHLOROPHENINE ORANGE RO (ClCo.].** Sodium azostilbenealdehydedehydrothiotoluidesulphonate. — (1896).
147	H_2SO_4...OY Bkn (M). NaOH...YOS1. HNO_2...YG Bkn (D).	(1) Compl. dis.; pers. BGT2 +. (2) Cotton G gray (L). (3) Wool YO Bkn (M); blk.	**LEATHER BLACK BO [B].**
148	H_2SO_4...V Bkn (D). NaOH...YO. HNO_2...YO–OY.	(1) Dis., 1 min.; pers., ¾ ret. (2) Cotton, YOT1; no tan. ppt. (3) Wool, YO−.	**DIAMINE ORANGE D [C].** Azo dyestuff.
149	H_2SO_4...W gray (D). NaOH...OY−. HNO_2...OY.	(1) Dis., 15 sec.; pers., OYT2. (2) Cotton, ←YOT2; no tan. ppt. (3) Wool, YOT1−.	**CHLORANTINE ORANGE TR [I].** Azo dyestuff.
150	H_2SO_4...Cool gray (M). NaOH...YOT1. HNO_2...YO–OY, T1.	(1) Dis., 30 sec.; pers., OYT2. (2) Cotton, OT1→; no tan. ppt. (3) Wool, YOT1.	**DIRECT ORANGE 2R [K].** Sodium azostilbenedisulphonate (?). — (1888 and 1892).
151	H_2SO_4...G gray (D). NaOH...YOT1. HNO_2...OY–YO.	(1) Dis., 35 sec.; pers., OYT2 − 1. (2) Cotton, OT2; no tan. ppt. (3) Wool, YOT1.	**CHLORAMINE ORANGE G [By].** Azo dyestuff. — (Introd. 1894).
			SECTION OF ORANGE-YELLOW
152	H_2SO_4...(f) VRS1. NaOH...YO. HNO_2...Unchanged.	(1) Dis., 90 sec.; pers., ←OYT1. (2) Cotton, OY; no tan. ppt. (3) Wool, ←OY.	**CHRYSOPHENINE R [By].** Stilbene-azo dyestuff (?).
153	As for No. 152 above.	(1) OYT2− dis., 2 min.; pers., ←YT1. (2) Cotton, YT1; no tan. ppt. (3) Wool, OY bril.	**CHLORAMINE YELLOW M [By).** Thiobenzenyl dyestuff.
154	H_2SO_4...R Bkn (M). NaOH...YO. HNO_2...Alm. unchanged.	(1) YT3− dis.; air, OYT3−; pers., OYT1. (2) Cotton, OYT1. (3) Wool, OY.	**DIRECT YELLOW T [I].**
155	H_2SO_4...R. NaOH...OY→. HNO_3...OY.	(1) Y–OY, T2− dis., 2 min.; pers., ret. orig. col. (2) Cotton, YT1; no tan. ppt. (3) Wool, OY→, bril.	**CHLORAMINE YELLOW G conc. [By].** Thiobenzenyl dyestuff.
			FLAVINDULIN O [B].
156	H_2SO_4...ORS1. NaOH...YO. HNO_2...Unchanged.	(1) Dis., 40 sec.; pers., YOT1→. (2) Cotton, OYT1; no tan. ppt. (3) Wool, OY→.	**DIRECT YELLOW R ext. [By].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 1027 for description.	
R Bkn (M) cryst. powder; s. aq. (O) w. YG fluor.; s. alc. (bril. YO – OY) w. YG fluor.; s. conc. H_2SO_4 (V→). — NaOH: ppt. — Dyeing: WA, SA, CT.	**144**
COLORS ON WOOL.	
See No. 1032 for description.	
See No. 1031 for description.	
COLORS ON WOOL.	
Dull brown cryst. powder w. coppery lustre; e. s. aq. (OR→, OY and ←YT2); i. alc.; s. conc. H_2SO_4 (VB). — Ppt. tests: Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**145**
See No. 483 for description.	
ROS1 powder; s. aq. (O, YO and OYT2, sl. turbid); i. alc.; s. conc. H_2SO_4 (V). — NaOH: compl. ppt. — Dyeing: CD. — Allied brand: Chlorophenine Orange RR [ClCo.].	**146**
Greenish-black powder; e. s. aq. (VB Bkn); e. s. alc. (VB); s. H_2SO_4 (G). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all –; NaOH, + (BGS2).	**147**
O Bkn (M) → powder; s. aq. (O, OY and OYT2); i. alc.; s. conc. H_2SO_4 (BV). — NaOH: no ppt. — Dyeing: CD.	**148**
Dark warm gray (D) cryst. powder w. coppery lustre; s. aq. (OR–RO and YO and ←YT2); i. alc.; s. conc. H_2SO_4 (B–VB). — NaOH: no ppt, ←OR and O and OY and OYT2→ sol. — Dyeing: CD.	**149**
Dark brown and orange powder; s. aq. (←RO and OY); i. alc.; s. conc. H_2SO_4 (VB). — NaOH: ± ppt. — Dyeing: CD. — Allied brands: Direct Orange G [G]; Mikado Orange G to 4R [L].	**150**
R Bkn (D) powder; s. aq. (OR and OY); i. alc.; s. conc. H_2SO_4 (VB). — NaOH: no ppt. — Dyeing: CD.	**151**
COLORS ON WOOL.	
OS1 powder; e. s. aq. (turbid ←YO and Y→); s. alc. (Y→); s. conc. H_2SO_4 (VR→); air ret., pale yellow tint. — NaOH; compl. ppt. — Dyeing: CD.	**152**
←YO powder; e. s. aq. (OY and GYT1); s. alc. (←Y); s. conc. H_2SO_4 (VR→). — NaOH: no ppt. — Dyeing: CD.	**153**
YO–O Bkn (M) powder; e. s. aq. (←YO, Y and YT2); i. alc.; s. conc. H_2SO_4 (←R). — Ppt. tests: H_2SO_4, Cu and Ca, all – ; NaOH, ±; Cr, +. — Dyeing: CD.	**154**
YO Bkn (D) powder; e. s. aq. (YOS2 + and Y→); s. alc. (Y→); s. conc. H_2SO_4 (ORS1 +). — NaOH: no ppt. (sl. turbid). — Dyeing: CD. — Allied brands: Oxyphenine [ClCo]; Chlorophenine Y [ClCo]; Diamine Fast Yellow B, C and FF [C]; Columbia Yellow [A]. Cf. No. 1066.	**155**
See No. 251 for description.	
OS2 powder; e. s. aq. (YO→ and GYT1); i. alc.; s. conc. H_2SO_4 (ORS1 +). — NaOH: ± ppt. — Dyeing: CD.	**156**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
157	H_2SO_4...OR Bkn (M)→. NaOH...YO. HNO_3...OY.	(1) Dis., 50 sec.; pers.←YOT2+. (2) Cotton, OYT1; no tan. ppt. (3) Wool, OY.	**DOMINION YELLOW O [At].**
158	H_2SO_4...ORS2. NaOH...←YO. HNO_3...Unchanged.	(1) Dis., 35 sec.; pers., YO−. (2) Cotton, ←YT2−; no tan. ppt. (3) Wool, OY.	**DIANIL YELLOW S [M].**
			CHLOROPHENINE Y (ClCo), Etc. Sulphonated oxidation products of dehydrothiotoluidine and primuline — (1887).
160	H_2SO_4...ROS2. NaOH...YO. HNO_3...Unchanged.	(1) Dis., 50 sec.; pers., OYT1. (2) Cotton, OY–YO, T2; no tan. ppt. (3) Wool, OY.	**SUN YELLOW RR conc. [SS].**
161	H_2SO_4...←O Bkn (M). NaOH...OYT1. HNO_3...Unchanged.	(1) Dis., 20 sec.; pers., YOT2. (2) Cotton, OYT2; no tan. ppt. (3) Wool, OYT1.	**DIAMINE FAST YELLOW A [C].**
162	H_2SO_4...OS1. NaOH...OY. HNO_3...Alm. unchanged.	(1) Compl. dis., 1 min.; pers., OYT2. (2) Cotton, OYT1. (3) Wool, OY→.	**DIPHENYL YELLOW 3G [Kell].**
163	H_2SO_4...O Bkn (M). NaOH...OYT1. HNO_3...←OY+.	(1) Alm. comp. dis., 2 min.; pers., Y–OY, T2. (2) Cotton, YT2−; no tan. ppt. (3) Wool, OYT1.	**CURCUPHENINE [ClCo].** Sodium sulphonate of dehydrothiotoluide of azoxystilbenealdehyde. — (1896).
164	H_2SO_4...YO–O, Bkn (L). NaOH...OYT1. HNO_3...OYT1.	(1) Dis., 15 sec.; pers., OYT2–3. (2) Cotton, YOT2; no tan. ppt. (3) Wool, OYT1.	**DIAMINE ORANGE G (C).**
			SECTION OF YELLOW
165	H_2SO_4...OR. NaOH...YT1. HNO_3...Unchanged.	(1) OYT2− dis., 2 min.; pers. ret. compl. (2) Cotton, YT1; no tan. ppt. (3) Wool, ←Y.	**OXYPHENINE [ClCo].** Oxidation products of dehydrothiotoluidine sulphonic acid, or of the same with primuline. — (1892).
166	H_2SO_4...OR Bkn (L). NaOH...←YT1. HNO_3...OY.	(1) Dis., 50 sec.; pers., OYT1. (2) Cotton, ←YT2−; no tan. ppt. (3) Wool, YT1.	**SUN YELLOW GG conc. [SS].** Sodium azoxystilbenedisulphonate (?).
167	H_2SO_4...RO. NaOH...YT1. HNO_3...OY.	(1) Dis., 30 sec.; pers., YT2+. (2) Cotton, YT1−; no tan. ppt. (3) Wool, YT1.	**COLUMBIA YELLOW [A].** Composition similar to that of No. 165. — (1896).
168	H_2SO_4...←O–OS1. NaOH...OR, bril. (gradual change.) HNO_3...OY.	(1) Dis., 40 sec.; pers., OYT1. (2) Cotton, YT2−; no tan. ppt. (3) Wool, *Y*.	**CHLORANTINE YELLOW GG [I].**
169	H_2SO_4...←OS1. NaOH...YO. HNO_3...OY.	(1) Dis., 50 sec.; pers., OYT1. (2) Cotton, YT2; no tan. ppt. (3) Wool, Y.	**CHLORAMINE YELLOW GG [By].** Thiobenzenyl dyestuff. (Intro. 1899).
			DIAMINE FAST YELLOW AGG [C].
			SECTION OF GREEN
170	H_2SO_4...Y. NaOH...GT3. HNO_3...Alm. unchanged.	(1) Dis., 15 sec.; pers., BGT1+; air ret. v. slight. (2) Cotton, BGT1+; tan., ppt. compl. (3) Wool, G→ or G, bril.	(1) **BRILLIANT GREEN [By].** (2) — — [K]. (3) — — [M]. (4) **EMERALD GREEN crystals [B].** (5) **ETHYL GREEN [A].** (1), (2) and (3) are Tetraethyldi-p-aminotriphenylcarbidride sulphate, zinc double chloride, or, rarely, oxalate). — (1879, 1880).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
←O Bkn (D) powder; e. s. aq. (YO and GYT1); i. alc.; s. conc. H_2SO_4 (RT1). — NaOH: ± O ppt. (forming slowly). — Dyeing: CD.	**157**
O Bkn (D) powder; e. s. aq. (YO and GYT1); i. alc.; s. conc. H_2SO_4 (R). — NaOH: ± ppt. — Dyeing: CD.	**158**
See No. 1066 for descriptions of numerous allied brands.	
OR Bkn (D) powder; e. s. aq. (O→ and GYT2); i. a.c.; s. conc. H_2SO_4 (RV). — NaOH: no ppt.; ←RO sol. — Dyeing: CD.	**160**
YOS2 + powder; e. s. aq. (turbid YO→ and GYT1); i. alc.; s. conc. H_2SO_4 (OR). — NaOH: ± ←YO ppt. — Dyeing: CD.	**161**
O Bkn (M) powder; e. s. aq. (YO, Y and YT2); i. alc.; s. conc. H_2SO_4 (R→). — Ppt. tests: H_2SO_4, Cu and Ca, all —; NaOH, ±; Cr, +. — Dyeing: CD.	**162**
ORS1 powder; s. aq. (YO and GYT1); i. alc.; s. conc. H_2SO_4 (ORS1). — NaOH: ppt. — Dyeing: CD.	**163**
YOS1 powder; s. aq. (YO and GYT1); i. alc.; s. conc. H_2SO_4 (R Bkn (M)). — NaOH: no ppt., turbid sol. — Dyeing: CD.	**164**
COLORS ON WOOL.	
O–YO, S1 powder; e. s. aq. (OY and GYT1); sl. s. alc. (GYT1); s. conc. H_2SO_4 (dull OR). — NaOH: no ppt. — Dyeing: CD. — Allied brands: Chloramine yellow [By]; Oxyphenine Gold [ClCo]; Diamine Fast Yellow B, C and FF [C]; Columbia Yellow [A]. (See No. 167).	**165**
ROS1 + powder; e. s. aq. (OY and GYT1); i. alc.; s. conc. H_2SO_4 (dull OR). — NaOH; no ppt. — Dyeing: CD. — [Probably essentially identical with: Sun Yellow [G] [L] [By] [A] [S]; Afghan Yellow [H]; Curcumine S [L]; Maize. — Disc. 1883.].	**166**
←YOS1 powder; e. s. aq. (YO and GYT1); v. sl. s. alc. (YT2); s. conc. H_2SO_4 (dull OR). — NaOH: ± ppt.; turbid sol. — Dyeing: CD. — Allied brands: See No. 165 above.	**167**
YO–O, S1 dull cryst. powder; e. s. aq. (OY→ and GYT2); i. alc.; s. conc. H_2SO_4 (RO–O). — Ppt. tests: Cr, +; Cu, Ca and NaOH, all —. — Dyeing: CD.	**168**
O Bkn (M)–YO Bkn (D) cryst. powder; e. s. aq. (OY→ and GYT2); i. alc.; s. conc. H_2SO_4 (RO–O). — Ppt. tests: Cr, + compl.; Cu, Ca and NaOH, all —. — Dyeing: CD.	**169**
See No. 542 for description.	
COLORS ON WOOL.	
All lustrous brassy crystals (dark greenish-yellow), e. s. aq. (←BG); e. s. alc. (←BG); s. conc. H_2SO_4 (OY). — NaOH: ± ppt., (alm. white). — Spectrum: 8.75 ± .05 (aq.). — Dyeing: WN, SS, CT. — Allied brands: Brilliant Green [C] [DH] [t.M] [O] [H] [etc.]; Malachite Green G and Diamond Green G [B]; Emerald Green [By]; Fast Green J [Mo. and P]; JJO [I].	**170**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_2 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
171	H_2SO_4...GY–Y, T1. NaOH...compl. dis. HNO_2...YGS1 dull.	(1) Dis., 10 sec.; pers. ret., abt. ½. (2) Cotton, BGT1; tan., ppt. (3) Wool, G–BG–.	**VICTORIA GREEN cryst. [B].** ("Victoria Green 3B [B]" is chlorhydrate or zinc chloride double salt of tetramethyldiaminodichlortriphenylcarbidride).

SECTION OF BLUE-GREEN

No.	COORDINATION TESTS.	(1), (2), (3)	Trade name.
172	H_2SO_4...YOS1. NaOH...YGT1. HNO_2...Alm. unchanged.	(1) Dis., 25 sec.; pers., BGT1+. (2) Cotton, BGT2; no tan. ppt. (3) Wool, ←BG+.	**NIGHT GREEN A extra conc. cryst. [t.M].**
173	H_2SO_4...OY Bkn (M). NaOH...OYT4. HNO_2...OYT2+, dull.	(1) Dis. compl. before boiling begins; pers. ret. ½. (2) Cotton, BG–GB, T1–; tan., ppt. (3) Wool, BGT2+.	**METHYL GREEN 5IE [P].** "Methyl Green [P]" is zinc chloride double salt of bromethylate of penta- and hexamethylmonoethyl-p-rosaniline. — (Disc. 1866).
174	H_2SO_4...OY–Y. NaOH...G Bkn (M). HNO_2...GS1.	(1) Dis., 1 min., pers. ret. ⅓; sl. air ret. (2) Cotton, BG–GB, T1–; tan., ppt. (3) Wool, BG–GB.	**TURQUOISE BLUE G [By].** (1896).
175	H_2SO_4...OY. NaOH...GT2+→. HNO_2...←BG, dull.	(1) Dis., 15 sec.; pers., BGT1; slight air ret. (2) Cotton, BGT1–; tan., ppt. (3) Wool, BG–GB.	**SETOGLAUCINE [G].** Tetramethyldiamino-o-chlortriphenylcarbidride hydrochloride. — (1896).
176	H_2SO_4...OY. NaOH...BGT4. HNO_2...G. v. sl. dull.	(1) Dis., 10 sec.; pers. ret., good. (2) Cotton, BGT2; no tan. ppt. (3) Wool, BG.	**CHROME GREEN [By].** Tetramethyldiaminotriphenylcarbinol-m-carbonic acid. — (1892).
177	H_2SO_4...Y. NaOH...YT3. HNO_2...GS1.	(1) Dis., 15 sec.; pers., BGT1+. (2) Cotton, BGT1; compl. tan. ppt. (3) Wool, BG.	(1) **MALACHITE GREEN [A].** (2) **SOLID GREEN O cryst.** Tetramethyldi-p-aminotriphenylcarbidride zinc double chloride, oxalate, or ferric double chloride. — (1877). **VICTORIA GREEN 3B [B].**
178	H_2SO_4...GYT1, changing quickly to Y. NaOH...GB. HNO_2...BG.	(1) Compl. dis., 1 min.; air, BG–G, T2; pers. BGT1+. (2) Cotton, BGT2. (3) Wool, BG–GB.	**NEPTUNE BLUE BG [B].** (1) **METHYLENE GREEN ext. yellow conc. [M].** (2) **METHYL GREEN B [By].**

SECTION OF GREEN-BLUE

No.	COORDINATION TESTS.	(1), (2), (3)	Trade name.
179	H_2SO_4...R Bkn (L). NaOH...R Bkn (L). HNO_2...OYT1.	(1) Dis., 10 sec.; pers., GB–BGT1; air ret. GYT3. (2) Cotton, ←GBT1; no tan. ppt. (3) Wool, GBT1+, sl. uneven.	(1) **TITAN COMO G [H].** (2) **OXYCHLORAZOL BLUE 6B [H].**
180	H_2SO_4...YO–OY, S1. NaOH...OYS1. HNO_2...YT1 dull.	(1) Dis., 15 sec.; pers., BGT1+. (2) Cotton, ←GBT1–2; tan., ppt. (3) Wool, GB bril.	**SETOCYANINE [G].** Diethyldiamino-o-chlorphenylditolylcarbidride hydrochloride. — (1896).
181	H_2SO_4...YOS1. NaOH...←YT2–. HNO_2...G Bkn (M).	(1) Dis., 15 sec.; pers., BGT1→. (2) Cotton, ←(GBT1–2); tan., ppt. (3) Wool, ←GB.	**TURQUOISE BLUE BB [By].** (1894).
182	H_2SO_4...Y Bkn (M). NaOH...white. HNO_2...GYT2+ dull.	(1) Dis. compl. before boiling begins; pers., BGT4. (2) Cotton, GBT2; tan., ppt. (3) Wool, GBT2+ r. uneven.	(1) **METHYL GREEN 3IE [P].** (2) **METHYL GREEN 4IE [P].** (3) **METHYL GREEN 5IE [P].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
←BGS1 lustrous cryst.; e. s. aq. (BG→); e. s. alc. (←BG); s. conc. H_2SO_4 (OY). — NaOH; alm. white ppt. — Spectrum: 9.13 (aq.). — Dyeing: WG, SS, CT.	**171**
COLORS ON WOOL.	
Small fragments w. coppery-red lustre; e. s. aq. (BG); e. s. alc. (BG→); s. conc. H_2SO_4 (YO and OY). — NaOH; no ppt. — Spectrum: *8.44* (aq.). — Dyeing: WGS.	**172**
YGS2 cryst. powder w. bronzy met. lustre; e. s. aq. (BG–GB); s. alc. (←BG); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. (colorless sol.) — Dyeing: SA. Wool requires special sulphuring preparation w. thiosulphate and acid, dyeing to BGS +. — Allied brands: Methyl Green [A] [By] [P]; Ethyl Green [KB].	**173**
Black powder w. sl. silvery lustre; e. s. aq. (GB); e. s. alc. (←GB); s. conc. H_2SO_4 (OY and YO); — NaOH: ppt. — Dyeing: CT.	**174**
V Bkn (v.D) powder containing particles w. coppery-red met. lustre; e. s. aq. (←GB); e. s. alc. (GB–BG); s. conc. H_2SO_4 (OY and YO). — NaOH: ± ppt. — Spectrum: 8.55 (aq.). — Dyeing: SS, CT. — Allied brand: New Fast Green 3B [I].	**175**
Dark reddish-brown powder containing cryst. particles w. bril. coppery-red lustre; e. s. aq. (BG); e. s. alc. (←BG); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt., colorless sol. — Dyeing: WCh.	**176**
Metallic green glittering plates; e. s. aq. (BG→); e. s. alc. (←BG bril.); s. con. H_2SO_4 (OY and YO). — NaOH: alm. white ppt. — Spectrum: 8.97 ± .08 (aq.). — Dyeing: WN, SA, CT. — Allied brands: Malachite Green [M] [K] [t.M]; Malachite Green B [B]; New Victoria Green [B]; New Green [By]; Fast Green [C]; Bitter-almond-oil Green; Benzal Green; Diamond Green [B]. See No. 17 for description.	**177**
BGS3–4 powder; e. s. aq. (B–GB and GBT2); e. s. alc. (B–BG and BGT2); s. conc. H_2SO_4 (Y). tests: H_2SO_4, – (GY +); NaOH, Cr, Cu and Ca, all –. — Spectrum: 8.36 (aq). — Dyeing: WGS. See No. 18 for descriptions.	**178**
COLORS ON WOOL.	
(1) BS2 powder, (2) BS3 powder. (1) Alm. i. c. aq.; s. h. aq. (VB and B); (2) s. aq. (VBS2 and B). (1, 2) e. s. alc. (GB and B); e. s. conc. H_2SO_4 (OR Bkn (L)). NaOH: no ppt. — Spectrum: (1) 10.54, weak and broad, (aq.); (2) 10.52, weak and broad, (aq.). — Dyeing: CD.	**179**
Neutral gray (D) powder; s. aq. (VB and GB); e. s. alc. (B and GB); s. conc. H_2SO_4 (O and OY). — NaOH: no ppt. (Y sol.). — Spectrum: 9.12 (aq.). — Dyeing: SS, CT. — Allied brand: Brilliant Glacier Blue [I].	**180**
VRS3 cryst. powder with blue-black lustre; s. aq. (B, GBT1 and ←GBT2); s. alc. (←GB); s. conc. H_2SO_4 (←YO). — NaOH: compl. ppt. (brown). — Spectrum: 8.67 (aq.). — Dyeing: CT.	**181**
G Bkn (D) cryst. powder w. met. lustre; e. s. aq. (←GB); e. s. alc. (BG–GB); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. (colorless sol.). — Spectrum: 8.59 (aq.). — Dyeing: SA; wool after special treatment w. thiosulphate and acid is colored BGS +; CT. — Allied brands: See No. 173.	**182**

No.	COORDINATION TESTS, (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF BLUE
183	H_2SO_4...R Bkn (D). NaOH...RV Bkn (D). HNO_3...OYT1–.	(1) Dis., 10 sec.; pers., BGT1–. BGT1 dull. (2) Cotton, BT2–GBT2; no tan. ppt. (3) Wool, B–.	**ISAMINE BLUE 6B [C].**
184	H_2SO_4...R sl. Bkn. NaOH...RVS2. HNO_3...G–BG.	(1) Dis., 15 sec.; pers., BG–GB, T1. (2) Cotton, ←BT2; no tan. ppt. (3) Wool, ←B–.	(1) **ACID BLUE FS [M].** (2) **ACID BLUE G [SS].**
185	H_2SO_4...R Bkn (M). NaOH...RVS2. HNO_3...GB–BG.	(1) Dis., 30 sec.; pers., GB–BG, T1+. (2) Cotton, ←BT2; no tan. ppt. (3) Wool, B.	**ACID BLUE R [SS].**
186	H_2SO_4...OR Bkn (M). NaOH...R Bkn (L). HNO_3...OYT2.	(1) Dis., 10 sec.; pers. ret., ½. (2) Cotton, BT2+; no tan. ppt. (3) Wool, BT1–VBT1.	**ISAMINE BLUE R [C].**
187	H_2SO_4...ORS1. NaOH...R Bkn (L). HNO_3...OYT1.	(1) Dis., 5 sec.; pers., GB–GB T1; air ret. BGT3–. (2) Cotton, BT2; no tan. ppt. (3) Wool, BT1.	(1) **COTTON BLUE 3 [K].** (2) **COTTON LIGHT BLUE O [K].**
188	H_2SO_4...ORS1. NaOH...R Bkn (D). HNO_3...OYT1.	(1) Dis., 5 sec.; pers., GBT1→. (2) Cotton, BT1–2; no tan. ppt. (3) Wool, B–.	**ALKALINE BLUE 5B [O].**
189	H_2SO_4...ORS2. NaOH...R Bkn (M). HNO_3...YT2→.	(1) Dis., 15 sec.; pers., GBT1→. (2) Cotton, BT1–; no tan. ppt. (3) Wool, B.	**SOLUBLE BLUE F3B [B].**
190	As for No. 189 above.	As for No. 189 above.	**PURE SOLUBLE BLUE [C].**
191	H_2SO_4...(f) ORS2. NaOH...R Bkn (M). HNO_3...←GYT1.	(1) Dis., 35 sec.; pers., GB→. (2) Cotton, BT2; no tan. ppt. (3) Wool, BS1.	**METHYL BLUE [K].** Sodium salt of triphenylpararosanilinetrisulphonic ac. — (1862).
192	H_2SO_4...OR Bkn (M). NaOH...OR Bkn (L). HNO_3...OYT1.	(1) Dis., 6 sec.; pers. ret. compl. (2) Cotton, GBT1; no tan. ppt. (3) Wool, (1, 2), BT1, (3), ←BT1.	(1) **OXYCHLORAZOL BLUE B [H].** (2) **OXYCHLORAZOL BLUE 3B [H].** (3) **TITAN COMO S [H].**
193	H_2SO_4...ORS2. NaOH...V Bkn (D). HNO_3...BGT1.	(1) Dis., 10 sec.; pers., GBT1+. (2) Cotton, BT2+; no tan. ppt. (3) Wool, (1) B, (2) BT1.	(1) **ALKALINE BLUE 7B [O].** (2) **ALKALI BLUE 5B [K].**
194	H_2SO_4...OR Bkn (M). NaOH...RV Bkn (D). HNO_3...OYT1 sl. dull.	(1) Dis., 10 sec.; pers., GBT1, sl. dull. (2) Cotton, ←BT2; no tan. ppt. (3) Wool, BT1.	(1) **BRILLIANT SKY BLUE 5G [By].** (2) **BRILLIANT SKY BLUE G [By].**
195	H_2SO_4...OR Bkn (M). NaOH...RV Bkn (D). HNO_3...BGS1.	(1) Dis., 20 sec.; pers., ←GBT1. (2) Cotton, BT2–; no tan. ppt. (3) Wool, B–.	**NEUTRAL BLUE R [M].**
196	H_2SO_4...ROS1. NaOH...V Bkn (D). HNO_3...GY Bkn (M)+.	(1) Dis., 10 sec.; pers., GBT1. (2) Cotton, BT2+; no tan. ppt. (3) Wool, BT1.	**METHYL ALKALI BLUE [O].** Sodium triphenyl-p-rosanilinemonosulphonate.
197	H_2SO_4...RO–OS1. NaOH...(f) VRS2 dull. HNO_3...←BG deep.	(1) Dis., 10 sec.; pers., BGT1–. (2) Cotton, GBS1; tan., ppt. (3) Wool, B.	**NIGHT BLUE [I].** p-Tolyltetraethyltriaminodiphenyl-α-naphthylcarbidride hydrochloride. — (1883).
198	H_2SO_4...RO. NaOH...R Bkn (M). HNO_3...OYT1.	(1) Dis., 2 sec.; pers., GBT1. (2) Cotton, BT2→+; no tan. ppt. (3) Wool, BT1.	**ALKALI BLUE [M].** Mixture of sodium triphenylrosanilinemonosulphonate and triphenylpararosanilinemonosulphonate.—(1862).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
V. dark violet powder; s. aq. (B); s. alc. (GB); s. conc. H_2SO_4 (dull OR); air ret., v. slight. — NaOH: no ppt. (deep RV–VR sol.). — Dyeing: CD.	183
(1) VRS3, (2) ← RVS3 powder; (1) s. aq. (VB and B); (2) sl. s. aq. (BT1); e. s. alc. (B and GB); s. conc. H_2SO_4 (R→). — NaOH: no ppt. ((1) dull V sol., (2) dull BVT2 sol.). — Dyeing: WGS.	184
RVS3 powder; e. s. aq. (VB and B); e. s. alc. (blue); s. H_2SO_4 (R). — NaOH: no ppt. (dark V sol.). — Dyeing: WGS. — [*"Acid Blue R and B (S)"* is made by sulphurizing a diphenyl-α,β-naphthylmethane dyestuff. A. P. #603016, E. P. #30015].	185
V. dark violet powder; alm. i. aq.; e. s. h. aq. (violet blue); e. s. alc. (B and VB); s. conc. H_2SO_4 (dull OR). — NaOH: no ppt. (deep VR sol.). — Dyeing: CD.	186
(1) BVS2, (2) RVS2→ powder; e. s. aq. (VB and B); s. alc. (GB and B); s. conc. H_2SO_4 (ORS1); air ret., v. slight. — NaOH: no ppt. (deep Bkn R sol.). — H_2SO_4: no ppt. — Dyeing: WGS, CAl.	187
VBS2 + powder; s. aq. (VB and B); e. s. alc. (←B and VB); s. conc. H_2SO_4 (OR). — NaOH: no ppt. (VR–RV sol.) — H_2SO_4: heavy ppt. — Air ret., slight. — Dyeing: Wool in alk. bath, color being developed by acid.	188
RVS2 cryst. powder; e. s. aq. (VB and VBT2); s. alc. (←B and VB); s. conc. H_2SO_4 (OR). — Air ret., slight. — NaOH: no ppt. (deep Bkn R sol.). — Spectrum: *12.02*, 14.20, 10.08 (aq.). — Dyeing: WGS.	189
VRS2 cryst. powd. — Spectrum: broad weak band abt. 9.56 (aq.). — Description otherwise as for No. 189 above.	190
←RVS2 powder; e. s. aq. (VB and B); s. alc. (GBT1 and B); s. conc. H_2SO_4 (ORS1). — NaOH: no ppt. (deep R→ Bkn sol.). — Dyeing: Silk and mordanted cotton. — Allied brands: — Methyl Blue [O] [C] [M] [B]; Brill. Cotton Blue, greenish [By]; XL Soluble Blue [BSS]; Diphenylamine Blue [KS]; Bavarian Blue DBF [A]; Helvetia Blue [G].	191
(1, 2) Dark blue-violet, (3) dark red-violet powder; (1, 2) s. aq. (blue); (3) alm. i. c. aq.; s. alc. (GB and B); s. conc. H_2SO_4 (OR, dull). — Air ret., BGT4. — NaOH: no ppt. (RV Bkn (M) sol.). — Spectrum: (1, 2, 3) weak bands approx. 9.12 (alc). — Dyeing: CD.	192
(1) VBS1, ( ) VBS2 powder; s. aq. (VB and B); s. alc. (VB and B); s. conc. H_2SO_4 (OR). — Air ret., slight. — NaOH: no ppt. ((1) dark RV, (2) Bkn VR (M) sol.). — H_2SO_4: ppt. — Dyeing: Wool in alk. bath with acid development, CAl.	193
Dark dull violet powder; e. s. aq. (VB and B); s alc. (GB and B); s. conc. H_2SO_4 (1) (dull OR, (2) R Bkn (D)). — NaOH: no ppt. (dark BV sol.). — Dyeing: CD.	194
VR–RV, S2 powder; e. s. aq. (VB and B); e. s. alc. (GB and B); s. conc. H_2SO_4 (dull R). — NaOH: no ppt. (dark BV sol.). — Dyeing: WN, WGS.	195
VBS1 powder; e. s. aq. (B and BT2); e. s alc. (B); s. conc. H_2SO_4 (RO–O, sl. Bkn). — NaOH: ± RVS2 ppt. — Spectrum: 9.18 ± .02 (alc.). — Dyeing: wool from alkaline bath, color developed by acid. — Allied brands: Methyl Alkali Blue [B] [K] [G] [M]; Alkali Blue D [A]; Alkali Blue 6B [I] [H].	196
RS3 powder w. bronzy lustre; e. s. aq. (VB and B); e. s. alc. (GB and VB); s. conc. H_2SO_4 (OR). — NaOH: compl. dark R ppt. — Spectrum: *8.70*, 10.53 (aq.). — Dyeing: WGS, SS, CD, CT. — Allied brand: Night Blue [B] [S].	197
VBS2 powder; alm. i. c. aq.; s. h. aq. (VB and B); e. s. alc. (VB and B); s. conc. H_2SO_4 (OR). — NaOH: no ppt. — Spectrum: 9.49 ± .02 (alc.). — Dyeing: wool from bath alkaline w. borax, color developed by acid. — Allied brands: Alkali Blue [A] [B] [By] [C] [D] [G] [L] [K] [O] [P] [t.M] [H] [DH] [Lev] [I] [Sch]; Nicholson Blue [S]; Fast Blue [S].	198

No.	**COORDINATION TESTS.** (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_2 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
199	H_2SO_4...OS1. NaOH...RS2→.	(1) Compl. dis., 10 sec.; pers. BGT1→. (2) Cotton, BT1. (3) Wool, B.	**BLUE [Base] SB [B].**
200	H_2SO_4...RO–OS1. NaOH...R Bkn (M). HNO_2...YT2.	(1) Dis., 5 sec.; pers., GBT1. (2) Cotton, BT2 – ; no tan. ppt. (3) Wool, BT1 +.	**METHYL BLUE for silk MLB [M].** Sodium triphenyl-p-rosanilinedisulphonate and trisulphonate.—(1862).
201	H_2SO_4...RO–OS1. NaOH...RS2. HNO_2...←BG, deep.	(1) Dis., 15 sec.; pers., BGT2 +. (2) Cotton, BT1; tan., ppt. (3) Wool, B.	(1) **VICTORIA BLUE B [B].** (2) **VICTORIA BLUE BS,** spirit soluble [B]. Phenyltetramethyltriaminodiphenyl-α-naphthylcarbidride hydrochloride.— (1883).
202	H_2SO_4...OS1. NaOH...R–VR, S2.	(1) Compl. dis., ¼ min.; pers., BGT1. (2) Cotton, BT1. (3) Wool, B –, bril.	**VICTORIA BLUE NIGHT [B].**
203	H_2SO_4...RO, dull. NaOH...ROT2, dull.	(1) Compl. dis., 10 sec.; pers., GB→ bril. (2) Cotton, BT2. (3) Wool, BT2 +.	**SOLUBLE BLUE SB [B].**
204	H_2SO_4...OS1. NaOH...RS2→.	(1) Compl. dis., 20 sec.; pers., GBT2 +. (2) Cotton, BT2. (3) Wool, B bril.	**TYPOPHOR BLUE [B].**
205	H_2SO_4...OS1. NaOH...B Bkn (L). HNO_2...BS1.	(1) Dis., 15 sec.; pers., BT1→. (2) Cotton, BT2→; no tan. ppt. (3) Wool, B→.	**ACID VIOLET 7BN [M].** Sodium tetramethyldiphenyltriaminocarbinoldisulphonate. — (1885).
206	H_2SO_4...OY. NaOH...W. gray (v.D). HNO_2...G→.	(1) Dis., 20 sec.; pers., BGT1. (2) Cotton, BT1 + ; compl. tan., ppt. (3) Wool, B.	(1) **BRILLIANT VICTORIA BLUE RB [I].** (2) **VICTORIA PURE BLUE B [B].**
207	H_2SO_4...OY. NaOH...W. gray (D). HNO_2...GT1→+.	(1) Dis., 30 sec.; pers., BGT2 (slow). (2) Cotton, BT1→; tan., ppt. (3) Wool, B bril.	**VICTORIA BLUE R [B].** Ethyltetramethyltriaminodiphenyl-α-naphthylcarbidride hydrochloride. (1892, 1893).
208	H_2SO_4...←YT1. NaOH...GBT1. HNO_2...BG Bkn (M).	(1) Dis., 60 sec.; pers., BT2 +. (2) Cotton, VBT2; no tan. ppt. (3) Wool, BT1.	**ACID VIOLET 8B ext. [By].**
209	H_2SO_4...Y. NaOH...B. HNO_2...G Bkn (M).	(1) Dis., 20 sec.; pers., GBT1 +. (2) Cotton, BT2 + ; tan., ppt. (3) Wool, B→.	**CRYSTAL VIOLET 10B [C].**
210	H_2SO_4...Y +. NaOH...N. gray (D). HNO_2...BGT1.	(1) Dis., 30 sec.; pers., BGT1, dull. (2) Cotton, BT2→+ ; tan., ppt. (3) Wool, B.	**NEW VICTORIA BLUE B [By].**
211	H_2SO_4...(f) B Bkn (D). NaOH...RV Bkn (D). HNO_2...YO–Y, Bkn (M).	(1) Dis., 15 sec.; pers., GBT1 +, dull. (2) Cotton, GBT1; no tan. ppt. (3) Wool, BT1 +.	(1) **CHLORAZOL BRILLIANT BLUE 10B [H].** (2) **CHLORAZOL BRILLIANT BLUE 12B [H].**
			SECTION OF VIOLET-BLUE
212	H_2SO_4...(f) ←ORS2. NaOH...R Bkn (D). HNO_2...OYT1.	(1) Dis., 30 sec.; pers., ¼ ret. (2) Cotton, BT2; no tan. ppt. (3) Wool, VB.	**WATER BLUE [C].**
213	H_2SO_4...ORS2. NaOH...RV Bkn (v.D). HNO_2...OYT1.	(1) Dis., 15 sec.; pers., GB; air ret. BGT2. (2) Cotton, BT1 – ; no tan. ppt. (3) Wool, VB.	**NICHOLSON BLUE No. 3 [B].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
V. dark red-brown powder; i. aq.; i. NaOH; e. s. alc. (B and GBT2); s. conc. H_2SO_4 (YO). — Printing.	199
VBS2 powder; e. s. aq. (VB and B); s. alc. (←B and VB); s. conc. H_2SO_4 (OR). — NaOH: no ppt. (dark VR sol.). — Spectrum: 9.60 ± .02 (methyl alc.). — Dyeing: SS. — Allied brands: Bavarian Blue DSF [A]; Methyl Blue water soluble [G]; Marine Blue B [I]; Soluble Blue [II].	200
(1) (←VRS2), (2) (←RS2) cryst. powders w. bronzy lustre; s. aq. (VB); e. s. alc. (←B and VB); s. conc. H_2SO_4 (O and OR). — NaOH; dark R ppt. ((2) ppt. obtained only after heating). — Spectrum: (2) 8.54 (alc). — Dyeing: WG, SS, CT. — Allied brands: Victoria Blue B [I] [S]; Victoria Blue BS Spirit Soluble [I].	201
RS2 powder w. coppery lustre; e. s. aq. (VB, B and BT2); e. s. alc. (VB); s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, + compl.; NaOH, + alm. compl.; Cr, Cu and Ca, all –. — Spectrum: *10.87*, 8.71 (aq.).	202
RVS3 cryst. powder; e. s. aq. (v. deep blue, B and BT2); e. s. alc. (B and GBT2); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, – or ±; NaOH, Cu and Ca, all –; Cr, + compl. — Spectrum: *12.10*, 14.17 (aq.). — Dyeing: WGS.	203
Greasy bluish black paste; when shaken w. h. aq. oil separates and a turbid B and BT2 sol. is formed; e. s. alc.; s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, + compl.; NaOH, –(RS2); Cr, Cu and Ca, all +. — Spectrum: 9.39 (alc).	204
BVS2 powder; sl. s. c. aq.; e. s. h. aq. (VB and VBT1); s. alc. (VB); s. conc. H_2SO_4 (O and OR). NaOH, no ppt. — Spectrum: *9.62*, 11.51 (alc.). — Dyeing: WGS.	205
RV Bkn (D) cryst. powder w. brassy lustre; e. s. aq. (B→); e. s. alc. (B); s. conc. H_2SO_4 (OY and YO). — NaOH: reddish-brown ppt. — Dyeing: WGS, SS, CT.	206
Dull green-blue powder w. sl. green. lustre; s. aq. (VB and B); e. s. alc. (VB and B); s. conc. H_2SO_4 (OY and YO). — NaOH: dark brown ppt. from hot sol. (cold sol. no ppt., YO Bkn (L) sol.). — Dyeing: WGS, SS, CT. — Allied brands: Victoria Blue R [I]; New Victoria Blue R [By].	207
Purplish black powder; e. s. aq. (BV and BT1); e. s. alc. (BV and BT1); s. conc. H_2SO_4 (OY and Y). — NaOH: no ppt. — Dyeing: WGS.	208
Gray-black powder; e. s. aq. or alc. (BT1→ and BV); s. conc. H_2SO_4 (OY and Y). — NaOH: ppt. — Spectrum: *9.55*, 11.77 (aq.). — Dyeing: CT.	209
G Bkn (D) cryst. powder w. met. lustre; sl. s. c. aq.; e. s. h. aq. (BV and BT1); e. s. alc. (VB and BT1); s. conc. H_2SO_4 (OY). — NaOH: dark brown ppt., (from hot sol.). — Dyeing: WGS, CT.	210
(1) V black, (2) B black powder; s. aq. (B); s. alc. (B and GBT1); s. conc. H_2SO_4 (VR Bkn (D)). — Air ret. v. slight. — NaOH: (1) no ppt.; (2) BVS2 ppt. — Spectrum: (1) 10.20; (2) 10.18 (aq.). — Dyeing: CD.	211
COLORS ON WOOL.	
Dark coppery-red fragments w. high met. lustre; e. s. aq. (BV); i. alc.; s. conc. H_2SO_4 (dull RO). — NaOH: no ppt. (dark R sol.). — Dyeing: WGS, SS, CT. — [The numerous brands of Water Blue or Soluble Blue are in general salts of trisulphonated triphenylrosaniline.]	212
Bluish-black powder w. sl. met. lustre; s. aq. (VB and B); e. s. alc. (←BT1 and VB); s. conc. H_2SO_4 (RO). — Ppt. tests: NaOH, –(dark RV sol.); H_2SO_4, + compl. — Dyeing: Wool in alk. bath, color being developed on fibre by acid. — Allied brands: Alkali Blues.	213

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
214	H_2SO_4...ROS2. NaOH...←R Bkn (D). HNO_3...GY Bkn (M).	(1) Dis., 10 sec.; pers., BT2. (2) Cotton, VBT2+; no tan. ppt. (3) Wool, VB.	**ALKALI BLUE 4R [A].**
215	H_2SO_4...(f) OS2. NaOH...R Bkn (D). HNO_3...B Bkn (M).	(1) Dis., 15 sec.; pers., BT1−. (2) Cotton, BT2→; no tan. ppt. (3) Wool, VB→ deep.	**SOLUBLE BLUE FB [B]**
216	H_2SO_4...OS2. NaOH...BT1. HNO_3...VBS2.	(1) Dis., 30 sec.; pers., abt. ⅓ ret. (2) Cotton, BT1−2→; no tan. ppt. (3) Wool, VB–BV, bril.	**ALKALI VIOLET 6B [B].** Sodium tetraethylmonomethylphenyl-p-rosanilinemonosulphonate. — (1886).
217	H_2SO_4...O Bkn (M–D). NaOH...V Bkn (D). HNO_3...GY Bkn (M).	(1) Dis., 60 sec.; pers., BT2+. (2) Cotton, VBT2. (3) Wool, VBT1.	**ALCOHOL BLUE SFC [K].** Triphenylrosaniline and triphenyl-p-rosaniline hydrochlorides, sulphates, or acetates. — (1862).
218	H_2SO_4...OS2. NaOH...(f) RV Bkn (v.D). HNO_3...G–BG deep.	(1) Dis., 60 sec.; pers., GBT1. (2) Cotton, BT1; tan., ppt. (from hot solution). (3) Wool, VB.	**VICTORIA BLUE [B].**
219	H_2SO_4...YOS1. NaOH...(f) W. gray (v.D). HNO_3...G→, bril.	(1) Dis., 30 sec.; pers., BG−. (2) Cotton, BT1; tan., ppt. (3) Wool, VB.	**NEW VICTORIA BLUE GG [Klp].**
220	H_2SO_4...YO–OY. NaOH...W. gray (v.D). HNO_3...G→.	(1) Dis., 20 sec.; pers., BGT1. (2) Cotton, B→; tan., ppt. (3) Wool, VB bril.	**VICTORIA BLUE RS conc. [SS].**
221	H_2SO_4...OY. NaOH...B. HNO_3...VB.	(1) Compl. dis., ½ min.; pers., BT1→+. (2) Cotton, BV. (3) Wool, VB→.	**ETHYL PURPLE 6B [B].** Hexaethylpararosaniline hydrochloride. — (1883).
222	H_2SO_4...Y dull. NaOH...white. HNO_3...YGT1 dull.	(1) Dis., 15 sec.; pers., BT3. (2) Cotton, GBT2+; tan., ppt. (3) Wool, VBT2+.	**METHYL GREEN cryst. [B].**
			SECTION OF BLUE-VIOLET
223	H_2SO_4...OS1. NaOH...BV, Bkn (D). HNO_3...BS2.	(1) Dis., 15 sec.; pers., ←VBT2 (2) Cotton, VBT1 dull; tan., ppt. (3) Wool, BV bril.	**VICTORIA BLUE 4R [B].** Phenylpentamethyltriamino-α-naphthyldiphenylcarbidride hydrochloride. — (1883).
224	H_2SO_4...YOS1. NaOH...R Bkn (L). HNO_3...BT1.	(1) Compl. dis., 15 sec.; pers., abt. ⅓. (2) Cotton, BVT1 sl. dull. (3) Wool, BV bril.	**BLEU ALCOOL BR [P].**
225	H_2SO_4...←YO. NaOH...VT2. HNO_3...B Bkn (D).	(1) Dis., 15 sec.; pers., VBT1+. (2) Cotton, BVT2; no tan. ppt. (3) Wool, BV bril.	**NEUTRAL VIOLET O [M].** Triphenylmethane dyestuff.
226	H_2SO_4...YO–OY. NaOH...Alm. compl. dis. HNO_3...BGS1→.	(1) Dis., 40 sec.; pers. ret. alm. compl. (2) Cotton, VT2→; no tan. ppt. (3) Wool, BV→.	**GUINEA VIOLET R [A].**
227	H_2SO_4...OY. NaOH...BT3−. HNO_3...G Bkn (M).	(1) Dis., 20 sec.; pers., BT1+. (2) Cotton, VT1; compl. tan., ppt. (3) Wool, BV bril.	**METHYL VIOLET 5B [A].**
228	H_2SO_4...←OY. NaOH...B. HNO_3...BS2.	(1) Dis., 30 sec.; pers., BT1. (2) Cotton, BV–V, bril; tan., ppt. (3) Wool, BV bril.	**ETHYL VIOLET [B].** Hexaethyl-p-rosaniline chlorhydrate. (1883).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
V. dark violet powder; s. aq. (VB); e. s. alc. (←VB); s. conc. H_2SO_4 (←OS1). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (VRS2 sol.). — Spectrum: 10.23 (aq.). — Dyeing: Wool dyed in alk. bath, color being afterwards developed on fibre by acid.	**214**
RVS3 cryst. powder; e. s. aq. (VB–BV); e. s. alc. (BT1 and VB→); s. conc. H_2SO_4 (dull O). — Ppt. tests: H_2SO_4, –; NaOH, – (dark VR sol.). — Dyeing: WGS.	**215**
←RVS2 powder w. sl. coppery lustre; d. s. aq. (VB→); e. s. alc. (←VB and BV); s. conc. H_2SO_4 (O). — NaOH: ppt. — Dyeing: WN, WGS. — Allied brand: Alkali Violet 6B [I].	**216**
RVS2 powder; sl. s. h. aq.; e. s. alc. (←VB and BV); s. conc. H_2SO_4 (dull O). — Dyeing: Cot. Print, Paper, Spirit varnishes. — Allied brands: Spirit or Alcohol Blue [B] [By] [L] [BrS] [H] [D]; Opal Blue [C] [BrS]; Light Blue [t.M] [P]; Blue, Alcohol Soluble [M].	**217**
R Bkn [D] powder; s. aq. (BT1); e. s. h. aq. (VB and BT1); e. s. alc. (VB and GBT1→); s. conc. H_2SO_4 [O]. — NaOH: dark R ppt. *from h. sol.* — Dyeing: WGS.	**218**
RV Bkn (v.D) powder; e. s. aq. (VB and BT1); e. s. alc. (GB and VB); s. conc. H_2SO_4 (OY and YO). — NaOH: dark brown ppt. — Dyeing: CT.	**219**
B Bkn (M) powder; s. aq. (cold sol. has greenish fluor.); e. s. h. aq. (VB→ and BT1); e. s. alc. (←BT1 and VB→); s. conc. H_2SO_4 (OY and YO). — NaOH: dark brown ppt. (from h. sol.).	**220**
BG–G, S2 powder; e. s. aq. (VS2 and VBT2); e. s. alc. (BV bril. and BT2 →); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, – (GY – Y Bkn (D)); NaOH, + compl.; Cr, Cu and Ca, all –. — Dyeing: CT. — Allied brands: Ethyl Violet [B] [I]. See No. 228.	**221**
YGS3 cryst. powder w. high met. lustre; e. s. aq. (BG–GB); sl. s. alc. (BG→); s. conc. H_2SO_4 (Y and YO). — NaOH: no ppt. (color finally completely discharged). — Dyeing: CT; wool w. sodium thiosulphate and sulphuric ac. [Methyl Green (By) (P) (A) and Ethyl Green (KB) (1866), are zinc double chlorides of the bromethylate of hexa- and pentamethylmonoethyl-p-rosaniline.]	**222**
COLORS ON WOOL.	
Bronzy glittering cryst. powder; sl. s. c. aq., (VBT1 filtrate); e. s. h. aq. (VB and VBT1); s. alc. (BV and BT1); s. conc. H_2SO_4 (O). — NaOH: compl. ppt. from h. sol. — Spectrum: *9.81*, 11.88 (aq.). — Dyeing: WGS, SS, CT. — Allied brands: Victoria Blue 4R [I] [S].	**223**
Brown cryst. powder w. bronzy lustre; i. c. aq.; s. h. aq. (RV – RVT2); e. s. alc. (VB); s. conc. H_2SO_4 (O Bkn (M)).	**224**
V. dark red-violet powder; s. aq. (blue violet); e. s. alc. (BV); s. conc. H_2SO_4 (O→). — NaOH: no ppt. — Dyeing: SA, WN.	**225**
V. dark red-violet powder; e. s. aq. (V–RV); e. s. alc. (BV); s. conc. H_2SO_4 (YO and OY). — NaOH: no ppt. — Dyeing: WGS.	**226**
GY–YG, S2 cryst. powder w. brassy lustre; e. s. aq. (←V and ←VT2); e. s. alc. (BV→); s. conc. H_2SO_4 (OY→). — NaOH: no ppt. (VBT2 sol.). — Dyeing: WG, SA, CT.	**227**
←G Bkn (D) cryst. powder; e. s. aq. or alc. (V and VBT2); s. conc. H_2SO_4 (Y and OY). — NaOH: ppt. — Spectrum: *9.94*, 11.95 (aq.). — Dyeing: CT, WN, SN. — Allied brand: Ethyl Violet [I] [G]; Ethyl Purple 6B (Cf. No. 221).	**228**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_2 (T.15).	(1) Color discharge and returns in Tests 8 and 10. (2) Cotton color (T.5); tannin ppt., (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
229	H_2SO_4...OY. NaOH...BT1→. HNO_2...B Bkn (M).	(1) Dis., 20 sec.; pers., BT1. (2) Cotton, BVT1+; tan., ppt. (3) Wool, BV bril.	(1) **CRYSTAL VIOLET O [M].** (2) **METHYL VIOLET 6B cryst. [M].** (3) **— — 6B [B].** (4) **— — 5B [By].** (1) Hexamethylpararosaniline hydrochloride. — (1883).
230	H_2SO_4...OY. NaOH...BV. HNO_2...VBS1.	(1) Dis., 20 sec.; pers., ←VBT1−. (2) Cotton, BVT1+; tan., ppt. (3) Wool, BV→, bril.	**METHYL VIOLET 4BO [C].**
			SECTION OF VIOLET
231	H_2SO_4...YO→. NaOH...B. HNO_2...BS2.	(1) Dis., 30 sec.; pers., VB. (2) Cotton, BVT1+; tan., ppt. (3) Wool, ←V, v. bril.	(1) **CRYSTAL VIOLET 5B, bluish [C].** (2) **CRYSTAL VIOLET 6B powder [A].**
232	H_2SO_4...YO→. NaOH...V Bkn (M or L). HNO_2...BGS1.	(1) Dis., 25 sec.; pers., (1, 2, 3) VBT1+, (4) BV. (2) Cotton, (1, 2, 3) VT1+, (4) VT1→; tan., ppt. (3) Wool, V bril.	(1) **METHYL VIOLET BB [M].** (2) **METHYL VIOLET 4Bo [O].** (3) **METHYL VIOLET 75278 I [C].** (4) **METHYL VIOLET B [By].** (1, 4) Mainly penta- and hexamethylpararosaniline hydrochlorides. — (1861).
233	H_2SO_4...YO→. NaOH...V Bkn (L). HNO_2...GBS2→.	(1) Dis., 25 sec.; pers., abt. ½ ret. (2) Cotton, BVT2; no tan. ppt. (3) Wool, ←VS1.	**ACID VIOLET N [M].** Sodium pentamethylbenzyltriaminophenylcarbinolsulphonate.—(1883).
234	H_2SO_4...OY. NaOH...VT3. HNO_2...G Bkn (M).	(1) Dis., 20 sec.; pers., BT1 Bkn. (2) Cotton, VT1; tan., ppt. (3) Wool, ←V.	**HOFMANN'S VIOLET BBB [B].** Salts of alkylpararosaniline or alkylrosaniline.
235	H_2SO_4...YS1. NaOH...VB. HNO_2...BGS1.	(1) Dis., 15 sec.; pers., BVT1-2. (2) Cotton, BVT1−; no tan. ppt. (3) Wool, ←V, bril.	**ALKALI VIOLET R [B].**
			SECTION OF RED-VIOLET
236	H_2SO_4...R. NaOH...VRS2. HNO_2...Alm. unchanged.	(1) VRT3 dis., 2 min.; pers., abt. ½ ret. (2) Cotton, VT2; no tan. ppt. (3) Wool, RV.	**FAST ACID VIOLET BE [M'**
237	H_2SO_4...OR. NaOH...VR. HNO_2...ROT2.	(1) Alm. compl. dis., 2 min.; pers., compl. ret. (2) Cotton, RVT2; no tan. ppt. (3) Wool, RV-VR.	**VIOLAMINE B [M].** Sodium diphenyl-m-aminophenolphthaleinesulphonate. — (1888).
238	H_2SO_4...(f) GBS1. NaOH...RT1+. HNO_2...RV Bkn (D).	(1) Dis., 15 sec.; pers., BT1−. (2) Cotton, RVT1; no tan. ppt. (3) Wool, RV-VR.	**UNION VIOLET B [H].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YGS2 cryst., lustrous lumps; e. s. aq. and alc. (V→ and BVT1); s. conc. H_2SO_4 (←YO and OY). — NaOH: (1, 2, 3) VBT1 ppt.; (4) compl. alm. blk. ppt. — Dyeing: WN, SA. — Allied brands: Cryst. Violet [B]; — 5BO [I]; Violet C [P]; Violet 7B extra [Mo]. — ["Methyl Violet 6B (M)" is said to be a hydrochloride of pentamethylbenzylpararosaniline.]	**229**
YGS2 cryst. brassy lustrous lumps; e. s. aq. (V→); e. s. alc. (V→ and BVT1); s. conc. H_2SO_4 (←YO and OY). — NaOH: compl. ppt. — Spectrum: *9.98*, 12.27 (aq.). — Dyeing: WG, SA, CT.	**230**
COLORS ON WOOL.	
YGS2 cryst. powder, w. brassy lustre; e. s. aq. and alc. (V and VBT2); s. conc. H_2SO_4 (OY and YO). — NaOH: ppt. — Spectrum: (1) *9.89*, 12.13 (aq.).; (2) *9.93*, 12.09 (aq.). — Dyeing: WN, SS, CT.	**231**
Metallic YGS2 lustrous cryst. fragments or powders; e. s. aq. (←RV); e. s. alc. (V and BV); s. conc. H_2SO_4 (OY and YO). — NaOH: compl. VR–R, S1 ppt. — Spectrum: (1) *9.98* (aq.); (3) *10.10*, 12.42 (aq.). — Dyeing: WG, SA, CT. — Allied brands: Methyl Violet B and 2B [A] [B] [C] [F] [t.M] [M] [O] [H]; Methyl Violet V_2 [K]; Violet de Paris [P]; Violet 3B ext. [M]; Pyoktanium Coeruleum (Merck).	**232**
RVS2 powder; e. s. aq. (←V); e. s. alc. (←V and BV); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. — Spectrum: *9.85*; 12.22 (aq). — Dyeing: WGS. — Allied brands: Acid Violet 4BN [B]; — — 6B [By]; — — 7B [L].	**233**
Metallic YGS2 glistening powder; e. s. aq. (←RV and V); e. s. alc. (V and BV); s. conc. H_2SO_4 (OY and YO). — NaOH: compl. ppt. — Dyeing: WG, SS, CT.	**234**
Bril. RVS2 powder; e. s. aq. (V); e. s. alc. (V and BV); s. conc. H_2SO_4 (OY). — NaOH: ppt. — Dyeing: WG, WGS. — [According to Schultz and Julius, allied to Alkali Violet 6B (B) (I).]	**235**
COLORS ON WOOL.	
Reddish brown-black powder; e. s. aq. (VR); e. s. alc. (VRS1 and RV); s. conc. H_2SO_4 (OR). — NaOH: no ppt. — Dyeing: WGS, SS.	**236**
Violet-black powder; e. s. aq. (violet red); e. s. alc. (VR and RVT1); s. conc. H_2SO_4 (OR). — Air ret, VRT2 —. — NaOH: no ppt. — Dyeing: WGS, SS. — Allied brand: Fast Acid Violet B [M].	**237**
Violet-black powder w. brassy lustre; e. s. aq. (VR→ and ←VRT2); s. alc. (BV); s. conc. H_2SO_4 (GB→). — NaOH: no ppt., R sol. — Dyeing: CWD.	**238**

DYES OF GENUS II, TRIPHENYL–

(COLORS DISCHARGED BY RONGALITE AND RESTORED

DIVISION B.—DYES THAT DO NOT COLOR COTTON

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_2 (T.15).	(1) Color discharge and return in Tests 8 and 10. (2) Cotton color, (T.5); tannin ppt. (T. 18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
			ACID ALIZARINE BLUE BB [M].
239	H_2SO_4. . .OR–OR S1. NaOH. . .(f) VR–R. HNO_2. . .RT1 (2 min.).	(1) RT3–4 dis., 2 min.; pers., alm. compl. ret. (2) Cotton, ←VRT2–; no tan. ppt. (3) Wool, VR.	**FAST ACID VIOLET RBE [M].**
240	H_2SO_4. . .OR. NaOH. . .(f) R–VR. HNO_2. . .RT2, sl. Bkn.	(1) RT3–dis., 2 min.; pers., ½ ret. (2) Cotton, ←VRT3; no tan. ppt. (3) Wool, VR.	**FAST ACID VIOLET R [M].**
			VIOLAMINE R [M].
241	H_2SO_4. . .OR. NaOH. . .RT1+. HNO_2. . .ORT1.	(1) Dis., 90 sec.; pers., VRT2. (2) Cotton, white; no tan. ppt. (3) Wool, VR–R.	**AZO ACID MAGENTA G [M].**
242	H_2SO_4. . .O. NaOH. . .Alm. unchanged. HNO_2. . .RT1.	(1) RT4–3 dis., 2 min.; pers.-ret. fairly good. (2) Cotton, ←*VRT2;* no tan. ppt. (3) Wool, VR–R, bril.	**FAST ACID VIOLET RGE [M].**
243	H_2SO_4. . .OS1. NaOH. . .R–VR, T1+. HNO_2. . .OT1–2→.	(1) ROT2– dis., 2 min.; pers.-ret., alm. compl. (2) Cotton, VRT3; no tan. ppt. (3) Wool, VRT1+.	**VIOLET 4RN [I].** Mixture of hydrochlorides, or hydroiodides, of di- or triethyl-p-rosaniline and mono-, di- or triethylrosaniline, or their methyl derivatives. — (1863).
244	H_2SO_4. . .O–YO, T1. NaOH. . .VRT1. HNO_2. . .YOT1→.	(1) RT4–3 dis., 2 min.; pers.-ret., compl. (2) Cotton, white; no tan. ppt. (3) Wool, VRT1.	**FAST CRIMSON WB [B].**
245	H_2SO_4. . .YOS2. NaOH. . .Rapid fading to OYT4. HNO_2. . .←OYT1.	(1) Dis., 10 sec.; pers., abt. ½ ret. (2) Cotton, white; no tan. ppt. (3) Wool, VR→.	(1) **FUCHSINE S [B].** (2) **ACID MAGENTA 77242 [C].** (3) **ACID MAGENTA extra [M].** (4) **ACID FUCHSINE SB [P & K].** Mixture of sodium or ammonium pararosaniline and rosaniline sulphonates. — (1877).
246	H_2SO_4. . .OYT1→. NaOH. . .White. HNO_2. . .OYT1.	(1) Dis., 10 sec.; pers.-ret., compl. (2) Cotton, white; no tan. ppt. (3) Wool, VRT1+.	(1) **RED VIOLET 5RS [B].** (2) **ACID VIOLET SRR [B].** (1) Sodium ethylrosanilinetrisulphonate. — (1877).

METHANE DERIVATIVES, ETC.

BY POTASSIUM PERSULPHATE IN TESTS 8 AND 10.)

TO TINT 2 OR A DEEPER TONE IN TEST 5.

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 1098 for description.	
Brownish-black powder; s. aq. (R and VRT1); e. s. alc. (VR→); s. conc. H_2SO_4 (RO – O). — Air ret., RT3+. — NaOH: no ppt. — Dyeing: WGS, WCh.	**239**
RV Bkn (D) powder; e. s. aq. (R→ and VRT1); e. s. alc. (VRT1); s. conc. H_2SO_4 (RO–O). — NaOH: no ppt. — Spectrum: 12.60 (aq.), ill defined. — Dyeing: WGS, WCh.	**240**
See No. 1101 for description.	
RS2 powder; e. s. aq. (R→ and ←RT2); e. s. alc. (VRT1); s. conc. H_2SO_4 (←R); — NaOH: no ppt. — Dyeing: WGS.	**241**
R Bkn (D) powder; e. s. aq. (R–RT1 and VRT1); s. alc. (VRT1); s. conc. H_2SO_4 (RO–O). — NaOH: no ppt. — Dyeing: WGS, WCh.	**242**
VRS2→ powder; e. s. aq. (R and VRT1); e. s. alc. (VRT1); s. conc. H_2SO_4 (OS1). — NaOH: no ppt. — Dyeing: WGS, SS, CT. — Allied brands: Violet 5R and RR (MO); Hofmann's Violet (KB); Dahlia; Primula R.	**243**
VRS2 powder; e. s. aq. (R→ and VRT1); s. alc. (VRT1); s. conc. H_2SO_4 (O). — NaOH: no ppt.	**244**
(1, 3, 4) YGS3 cryst. powder w. met. lustre, (2) greenish-black powder; e. s. aq. (R→ and VRT1); s. alc. (VRT1); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt.; OYT4 sol. — Spectrum: *11.73*, 15.43 approx. (aq.). — Dyeing: WGS, SS. — Allied brands: Acid Magenta [H] [B] [etc.]; Rubine S [A]; Acid Fuchsine [D] [L] [O] [DH]; Acid Roseine.	**245**
V Bkn (D) powder; e. s. aq. (R–VR and VRT1); s. alc. (violet-red); s. conc. H_2SO_4 (OY→). — NaOH: no ppt., alm. colorless sol. — Spectrum: *11.32*, 14.27 (alc.). — Dyeing: WGS, SS, CT.	**246**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and return in Tests 8 and 10. (2) Cotton color, (T.5); tannin ppt. (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
247	H_2SO_4...(f) VS2. NaOH...RT1+. HNO_3...R Bkn (M).	(1) Dis., 20 sec.; pers., BGT2. (2) Cotton, white; no tan. ppt. (3) Wool, VR→ sl. dull.	**CHROME CARMINE A [By].**
			SECTION OF RED
248	H_2SO_4...←O. NaOH...VR. HNO_3...RT1.	(1) VRT2 – dis.; pers.-ret., good. (2) Cotton, white. (3) Wool, R–VR.	**FAST ACID MAGENTA G [M].**
			SECTION OF YELLOW-ORANGE
			(1) **BRAZILWOOD [AD].** (2) **LIMAWOOD [AD].** (3) **HYPERNIC [AD].**
249	H_2SO_4...OYS1. NaOH...←RT1. HNO_3...←OYT1.	(1) Dis., 5 sec.; pers., OYT2. (2) Cotton, white; no tan. ppt. (3) Wool, YOT1.	**YELLOW CORALLINE [Kahlbaum].** Sodium salts of aurine (trioxytriphenylcarbinol), oxidized aurine, methylaurine and pseudorosolic acid. — (1834).
			SECTION OF ORANGE-YELLOW
			INDIAN YELLOW G [By].
250	H_2SO_4...R. NaOH...OY. HNO_3...YO (intensification).	(1) Compl. dis., 2 min.; pers., ←YT2. (2) Cotton, white; no tan. ppt. (3) Wool, OY bril.	**MILLING YELLOW GA [A].**
251	H_2SO_4...RS2. NaOH...Y Bkn (M). HNO_3...OY.	(1) YT2– dis., 50 sec.; pers.-ret., good. (2) Cotton, OYT3+; tan., ppt. (3) Wool, OYS1.	**FLAVINDULINE O [B].**
			MILLING YELLOW O [C].
			DIANIL YELLOW [M].
253	H_2SO_4...ORS1. NaOH...OY. HNO_3...Intensification.	(1) Dis., 30 sec.; pers., ←OYT1. (2) Cotton, alm. white; no tan. ppt. (3) Wool, OY.	(1) **DIRECT YELLOW G conc. [K].** Sodium salt of a dinitrostilbenesulphonic acid (?).
254	H_2SO_4...ROS2. NaOH...OY→. HNO_3...Unchanged.	(1) Dis., 1 min.; pers.-ret., ⅔; air ret. OYT3–4. (2) Cotton, YT2–; no tan. ppt. (3) Wool, OY→, bril.	**DIPHENYL CITRONINE G [G].** Sodium salt of nitrostilbenedisulphonic acid-azoxybenzene. — (1897).
			FAST YELLOW G [K].
			SECTION OF YELLOW
255	H_2SO_4...(f) OYS2. NaOH...(f and cl) Blk. HNO_3...OYS2.	(1) Dis., alm. compl. 2 min.; pers.-ret., complete. (2) Cotton, white. (3) Wool, Y Bkn (L).	(1) **CURED LOGWOOD [AD].** (2) **UNCURED LOGWOOD [Jamaica] [AD].** — The wood of *Hæmatoxylon Campechianum* coming chiefly from West India Islands and Central America. In the cured wood the leuco comp. hæmatoxylin, $C_{16}H_{14}O_6$, which is the true coloring matter, has been more or less compl. oxidized to hæmatein, $C_{16}H_{12}O_6$, by contact of the moistened chips with atmospheric oxygen.
			SECTION OF GREEN
256	H_2SO_4...YO. NaOH...(1) YGT2+; (2) GT2+. HNO_3...Intensification.	(1) Dis., 15 sec.; pers.-ret., good, but slightly bluer. (2) Cotton, white; no tan. ppt. (3) Wool, GT1–G.	(1) **LIGHT GREEN 2G [t.M].** (2) **ACID GREEN GG extra [By].** (3) **SULPHON GREEN GG [SS].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Very dark gray-brown cryst. powder; e. s. aq. (←R and VRT2→); s. alc. (VR); s. conc. H_2SO_4 (BV). — NaOH: no ppt. (sol. redder). — Dyeing: WGS.	247
COLORS ON WOOL.	
RS1 powder; e. s. aq. (R – OR and VRT1); e. s. alc. (VRT1 w. pale yel. fluor.); s. conc. H_2SO_4 (O).—Ppt. tests: tannin and NaOH, – (←R). — Dyeing: WGS.	248
COLORS ON WOOL.	
See No. 1136 for descriptions.	
Dull red-violet lumps w. conchoidal fracture; e. s. aq. (OR, changing on dilution to YO); e. s. alc. (OY and YO); s. conc. H_2SO_4 (Y). — NaOH: no ppt. — Spectrum: 12.01 (aq.). — Dyeing: Preparation of red lakes for paper staining; acidimetric indicator.— Allied brands: — The names Aurine and Rosolic Acid are applied to the aq.-insol. phenols of which Yellow line is the sol. salt.	249
COLORS ON WOOL.	
See No. 910 for description.	
←OY powder; e. s. aq. (OY→ and GT1); s. alc. (Y→); s. conc. H_2SO_4 (R). — NaOH: cryst. ppt. w. silky lustre. — Dyeing: WGS.	250
YOS2 powder; s. aq. (YO→ and GYT1); s. alc. (←Y); d. s. conc. H_2SO_4 (RT2) becoming yellow on dilution w. aq. — NaOH: GYT1 ppt. — Dyeing: CT. ["Flavinduline (B)" = Phenylphenanthraphenazoniumchloride. (Disc. 1893.)]	251
See No. 913 for description.	
See No. 158 for description.	
R Bkn (D) powder; e. s. aq. (YO and GYT1); i. alc.; s. conc. H_2SO_4 (R). — NaOH: ppt. — Dyeing: CD. — Allied brand: Direct Yellow R [K].	253
O powder; e. s. aq. (OY→ and GYT1); s. alc. (Y); s. conc. H_2SO_4 (←RO). — NaOH: no ppt. — Dyeing: CD.	254
See No. 918 for description.	
COLORS ON WOOL.	
(1) OS3 ground wood; sl. s. c. aq.; more s. h. aq. (decoction OR); s. ac. (Y–YS1). (2) OS1→ small chips; decoction (h. aq.) OR; alc. sol. (YT1+). — Wool, Y Bkn (D) w. blk. streaks in After-chrome Test 16. — NaOH: no ppt. (very dark violet sol.). — Spectrum: See Formanek — Dyeing: Extensively used as mordant color, especially in blacks w. Cr for wool, w. Fe for silk.	255
COLORS ON WOOL.	
(1) Black or (2, 3) green-black powders w. scintillating red reflections in direct sunlight; e. s. aq. (←BG); e. s. alc. (BG–G); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt.; (1, 3) GT2 sol.; (2) ←BGT2 sol. — Dyeing: WGS.	256

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_2 (T. 15).	(1) Color discharge and return in Tests 8 and 10. (2) Cotton color, (T.5); tannin ppt. (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
257	H_2SO_4...YO. NaOH...GT2−. HNO_2...Intensification.	(1) Compl. dis., 15 sec.; pers.-ret., ⅔, sl. bluer. (2) Cotton, white; no tan. ppt. (3) Wool, G→.	(1) **ACID GREEN ext. conc. [C].** (2) **ACID GREEN conc. [M].** (3) **ACID GREEN conc. [K].** (4) **ACID GREEN 780 [C].** (5) **ACID VICTORIA GREEN SN [B].** (6) **LIGHT GREEN SF YELLOWISH [B].** (1, 6) Sodium diethyldibenzyldiaminotriphenylcarbinoltrisulphonate.— (1879).
258	H_2SO_4...YO. NaOH...BG–G, T1.	(1) Comp. dis., 15 sec.; pers., BGT1–BG, bril. (2) Cotton, white; no tan. ppt. (3) Wool, G→.	**ACID GREEN GG [By].**
259	H_2SO_4...OYS1. NaOH...White. HNO_2...Sl. intensification.	(1) Compl. dis., 15 sec.; pers., BG. (2) Cotton, white; no tan. ppt. (3) Wool, G→.	(1) **GUINEA GREEN B [A].** (2) **GUINEA GREEN B ext. [A].** (3) **ACID GREEN 2BG [t.M].** (1) Sodium diethyldibenzyldiaminotriphenylcarbinoldisulphonate. — (1883).
260	H_2SO_4...OY. NaOH...←GYT1. HNO_2...Intensification.	(1) Compl. dis., 15 sec.; pers., BG. (2) Cotton, white; no tan. ppt. (3) Wool, G.	**NEW ACID GREEN GX [By].**
261	H_2SO_4...OY→. NaOH...G–BG, T1+. HNO_2...G.	(1) Compl. dis., 20 sec.; pers., BGT1+. (2) Cotton, white; no tan. ppt. (3) Wool, G→.	**NAPHTHALINE GREEN conc. [M].**
262	H_2SO_4...Y. NaOH...G–BG. HNO_2...Intensification.	(1) Compl. dis., 25 sec.; pers.-ret., ½. (2) Cotton, white; no tan. ppt. (3) Wool, G–BG.	**GUINEA FAST GREEN B [A].**
263	H_2SO_4...YGS2. NaOH...N. gray (D). HNO_2...GB Bkn (M).	(1) Dis., 15 sec.; pers., BGT3. (2) Cotton, white; no tan. ppt. (3) Wool, G Bkn (M–D).	**CARBON BLACK GAT [M].**
			SECTION OF BLUE-GREEN
264	H_2SO_4...YO–OY. NaOH...G–GY Bkn (L) HNO_2...Intensification.	(1) Dis., 30 sec.; pers., ⅓ ret. (2) Cotton, white; no tan. ppt. (3) Wool, BG bril.	**NEPTUNE GREEN SG [B].**
265	H_2SO_4...←YO. NaOH...YG Bkn (M). HNO_2...Intensification.	(1) Dis., 30 sec.; pers.-ret., abt. ½. (2) Cotton, white; no tan. ppt. (3) Wool, BG bril.	**BRILLIANT MILLING GREEN B [C].**
266	H_2SO_4...←YO. NaOH...YG Bkn (L). HNO_2...←BG bril.	(1) Dis., 15 sec.; pers., BGT1+. (2) Cotton, white; no tan. ppt. (3) Wool, BG bril.	**BENZYL GREEN B [I].**
267	H_2SO_4...YO–OY. NaOH...BGT1+. HNO_2...G–BG.	(1) Dis., 25 sec.; pers.-ret., abt. ½. (2) Cotton, white; no tan. ppt. (3) Wool, BG.	**KITON GREEN N [I].**
268	H_2SO_4...OY. NaOH...YOS1+. HNO_2...BG–G.	(1) Compl. dis., 20 sec.; pers., BG. (2) Cotton, white. (3) Wool, BG–GB.	**NEPTUNE GREEN SB [B].**
269	H_2SO_4...OY. NaOH...OYT4. HNO_2...G, intensification.	(1) Dis., 30 sec.; pers.-ret., compl. (2) Cotton, white; no tan. ppt. (3) Wool, ←BG–BGT1.	**NEW ACID GREEN 3BX [By].**
270	H_2SO_4...←OY. NaOH...OYT4. HNO_2...G sl. dull.	(1) Dis., 15 sec.; pers.-ret., abt. ½. (2) Cotton, white; no tan. ppt. (3) Wool, BG bril.	(1) **BRILLIANT ACID GREEN 6B [By].** (2) **NIGHT GREEN A [t.M].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
(1, 3, 4) BG–G, S2, (2, 5, 6) Greenish black powders; e. s. aq. (←BG); s. alc. (BG–G); s. conc. H_2SO_4 (OY and YO). — Air ret., slight — NaOH: no ppt., ←BGT2 sol. — Spectrum: (1) 8.53 (aq.).; (2, 5), 8.54 (aq.); (6), 8.50 (aq.). — Dyeing: WGS. Dyes of the constitution of (1) & (6) may be used in foods according to the U. S. "Pure Food Regulations."— Allied brands: Acid Green [By] [O] [t.M]; Acid Green [M]; Green Solution [t.M].	**257**
BGS3 powder; e. s. aq. (←BG); s. alc. (BG–G); s. conc. H_2SO_4 (OY and YO). — Air ret., BGT3. — NaOH: no ppt. (←BGT2.) — Dyeing: WGS.	**258**
(1, 2) ←BGS2, (3) black powder; e. s. aq. (←GB); e. s. alc. (GB–G); s. conc. H_2SO_4 (Y and OY). Air ret., v. sl. — NaOH: no ppt. (←GBT2 sol.). — Spectrum: (1) 8.95 (aq.), 8.70 (alc.); (3) 8.96 (aq.), 8.70 (alc.). — Dyeing: WGS.	**259**
Greenish-black powder; e. s. aq. (←BG); e. s. alc. (BG–G); s. conc. H_2SO_4 (Y and OY). — NaOH: no ppt. (YG sol.) — Dyeing: WGS.	**260**
RS3–black cryst. powder or fragments w. strong coppery lustre; e. s. aq. (BG); e. s. alc. (G–BG); s. conc. H_2SO_4 (Y and OY). — NaOH: no ppt. — Dyeing: WGS.	**261**
G–BG, S2 powder; e. s. aq. (BG–GB); e. s. alc. (←BG); s. conc. H_2SO_4 (Y and GY). — NaOH: no ppt. — Air ret., GT3. — Dyeing: WGS.	**262**
Bronzy-black powder; e. s. aq. (←BV); e. s. alc. (G–BG); s. conc. H_2SO_4 (←G Bkn (D)). — NaOH: no ppt. — Dyeing: WGS.	**263**
COLORS ON WOOL.	
GB-black powder; e. s. aq. or alc. (BG); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. — Dyeing: WGS.	**264**
GB to black powder; e. s. aq. and alc. (BG→); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. — Spectrum: 8.45 (aq.). — Dyeing: WGS.	**265**
BGS1 cryst. powder; e. s. aq. (BG→ and BGT2); e. s. alc. (BG→); s. conc. H_2SO_4 (YO and OY). — NaOH: no ppt. (BG sol.) — Dyeing: WGS.	**266**
BGS2 powder; e. s. aq. (BG→); s. alc. (BG→); e. s. conc. H_2SO_4 (OY and YO).—NaOH: no ppt. (GB sol.). — Dyeing: WGS.	**267**
VBS3 powder; e. s. aq. (B, GB and GBT2); e. s. alc. (GB); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, NaOH (GY Bkn), Cr, Cu and Ca, all –. — Dyeing: WGS.	**268**
Greenish-black powder; e. s. aq. or alc. (←BG); s. conc. H_2SO_4 (Y and OY). — NaOH: no ppt. (sol. becomes colorless). — Dyeing: WGS.	**269**
Blue-black powder; e. s. aq. and alc. (BG→); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. — Spectrum: (2) *8.47* (aq.); (2) 8.29 (alc.). — Dyeing: WGS.	**270**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and return in Tests 8 and 10. (2) Cotton color, (T.5); tannin ppt. (T. 18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
271	H_2SO_4...OY. NaOH...YGT2. HNO_3...←BG.	(1) Dis., 20 sec.; pers.-ret., ⅓. (2) Cotton, white; no tan. ppt. (3) Wool, BG.	**FAST GREEN CR powder [By].**
272	H_2SO_4...OY. NaOH...G–BG, T2. HNO_3...Greener.	(1) Dis., 15 sec.; pers.-ret., ⅓. (2) Cotton, white; no tan. ppt. (3) Wool, BGS1.	**FAST GREEN [By].** Sodium tetramethyldibenzylpseudorosanilinedisulphonate. — (1885.)
273	H_2SO_4...OY. NaOH...BG–G. HNO_3...Sl. yellower.	(1) Dis., 90 sec.; pers., BGT1. (2) Cotton, white; no tan. ppt. (3) Wool, ←BG.	**ALKALI FAST GREEN G [By].**
274	H_2SO_4...OY. NaOH...BG. HNO_3...G–BG, S1.	(1) Dis., 1 min.; pers., BGT1. (2) Cotton, BGT3→; no tan. ppt. (3) Wool, BG→.	(1) **FAST GREEN ext. bluish. [By].** (2) **FAST LIGHT GREEN [By].** (1) Sodium tetramethyldibenzyl-pseudo-rosanilinedisulphonate. — (Cf. No. 272).
275	H_2SO_4...OYT2. NaOH...BG–G. HNO_3...GS1.	(1) Dis., 90 sec.; pers., BGT1. (2) Cotton, white; no tan. ppt. (3) Wool, ←BG.	(1) **ALKALI FAST GREEN B [By].** (2) **CYANOLE FAST GREEN G [C].**
276	H_2SO_4...OYT1→. NaOH...BGS1→. HNO_3...←BGS1+.	(1) Dis., 1¾ min.; pers., GBT1; air ret., BGT3. (2) Cotton, white; no tan. ppt. (3) Wool, BG.	**KITON GREEN [I].**
277	H_2SO_4...OYT2. NaOH...BG–GB. HNO_3...←BGS1–2+.	(1) Dis., 1 min.; pers., BGT1; air ret. faint. (2) Cotton, white; no tan. ppt. (3) Wool, (1, 2) BG–GB, bril.; (3) BG bril.	(1) **PATENT BLUE V [M].** (2) **PATENT BLUE [M].** (3) **NEW PATENT BLUE GA [By].** (4) **NEW PATENT BLUE B [By].** (1, 4) Acid calcium, magnesium, or sodium m-oxytetraethyldiaminotriphenylcarbidride. — (1888).
278	H_2SO_4...OYT2 or 3. NaOH...GB–BG. HNO_3...BGS1+.	(1) Dis., 1 min.; compl. pers.-ret.; air ret. BGT1. (2) Cotton, white; no tan. ppt. (3) Wool, BG–GB.	(1) **TETRACYANOLE A [C].** (2) **PATENT BLUE A [M].** Calcium m-oxydiethyldibenzyldiaminotriphenylcarbidridedisulphonate. — (1888).
279	H_2SO_4...OY→. NaOH...GB. HNO_3...GS2.	(1) Dis., 20 sec.; pers., BGT1; alm. no air ret. (2) Cotton, white; no tan. ppt. (3) Wool, BG.	(1) **WOOL GREEN S [B].** (2) **WOOL GREEN BS [By].** (3) **CYANOLE GREEN B [C].** (4) **BRILL. ACID BLUE V [By].** Sodium tetramethyldiaminodiphenyl-β-oxynaphthylcarbidridedisulphonate. — (1883).
280	H_2SO_4...←Y. NaOH...BG–BG, T1. HNO_3...G–BG, S1.	(1) Dis., 25 sec.; pers.-ret., good. (2) Cotton, white; no tan. ppt. (3) Wool, BG.	**BIEBRICH ACID BLUE GG [K].** Sulphonated triphenylmethane dye-stuff (?). — (1896).
281	H_2SO_4...Y–Y, S1. NaOH...GB→. HNO_3...G–BG.	(1) Dis., 10 sec.; pers., BGT1–BG. (2) Cotton, white; no tan. ppt. (3) Wool, BG.	**CYANOLE GREEN 6G [C].**
			SECTION OF GREEN-BLUE
282	H_2SO_4...ROS2. NaOH...YO Bkn (L). HNO_3...OYT2→.	(1) Dis., 30 sec.; pers.-ret., ½. (2) Cotton, white; no tan. ppt. (3) Wool, GBT1 (uneven).	**ALKALI BLUE D [A].** Sodium triphenyl-p-rosanilinemonosulphonate. — (1875).
283	H_2SO_4...YOT1 sl. dull. NaOH...BG–GB. HNO_3...BGS1.	(1) Dis., 1 min.; pers.-ret., ½. (2) Cotton, BVT4; no tan. ppt. (3) Wool, GB.	**PATENT BLUE JI [M].**
284	H_2SO_4...OYT2—, dull. NaOH...BGS2. HNO_3...GS2.	(1) Dis., 1 min.; pers., BGT1→. (2) Cotton, white; no tan. ppt. (3) Wool, GB bril.	**CYANINE B [M].** Oxidation product of Patent Blue V. (1891).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Bluish-black powder; e. s. aq. and alc. (←BG); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. (sol. becoming paler). — Dyeing: WGS.	**271**
Blue-black powder; e. s. aq. (BG→); i. alc.; s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. (sol. becoming paler). — Dyeing: WGS. — Allied brands: Fast Green extra [By]; Fast Green extra bluish [By].	**272**
Black powder; e. s. aq. and alc. (G–BG); s. conc. H_2SO_4 (OY). — NaOH: no ppt. — Dyeing: WGS.	**273**
Violet-black powder; e. s. aq. (←GB); s. alc. (←GB); s. conc. H_2SO_4 (Y and OY).—NaOH: no ppt. — Spectrum: (1) 8.59 ± .01 (aq.).—Dyeing: WGS. — Allied brands: — — [By]; — — extra [By].	**274**
(1) Green-black, (2) BGS2 powders; e. s. aq. (←BGS1 and BG); e. s. alc. (G—BG); s. conc. H_2SO_4, (1) (YGT2), (2) (YT2). — NaOH: no ppt. — Dyeing: WGS.	**275**
GB–BG, S2 powder; e. s. aq. (BG–GB); s. alc. (BG–GB); s. conc. H_2SO_4 (Y). — NaOH: no ppt. — Dyeing: WGS.	**276**
(1) Blue-black, (2) violet-black, (3) GB–BG, S2, (4) GB–blk powder; e. s. aq. (B and GB); e. s. alc. (←GB); sl. s. conc. H_2SO_4 (1, 2, 3) (YS1), (4) (OYS1). — NaOH: no ppt.— Spectrum: 8.32 (aq.). — Dyeing: SS, WGS. — Allied brands: Patent Blue Superfine conc. [M]; New Patent Blue 4B, [By].	**277**
(1) Indigo-blue, (2) BS2, (3) blue-green to blk. powders; e. s. aq. (BS1 and GB); e. s. alc. (←GB); sl. s. conc. H_2SO_4 (YS1). — NaOH: no ppt. — Spectrum: 8.36 (aq.). — Dyeing: SS, WGS.	**278**
(1) Violet-black, (2, 3) VR to blk. powders; e. s. aq. (←GB); s. alc. (GB and B); s. conc. H_2SO_4 (1) (YS1), (2, 3) (OY). — NaOH: no ppt. (deep VB sol.). — Spectrum: (1) 8.40 (aq.). — Dyeing: WGS. — Allied brands: Wool Green S, [I] [S].	**279**
Bluish-black powder; e. s. alc. and aq. (GB); s. conc. H_2SO_4 (Y and OY). — NaOH: no ppt. — Dyeing: WGS.	**280**
VRS3 powder w. small cryst. of coppery lustre; e. s. aq. (←BG); e. s. alc. (←GB); s. conc. H_2SO_4 (YS1 +). — NaOH: no ppt. (v. dark VB sol.) — Spectrum: 8.25 (aq.). — Dyeing: WGS.	**281**
COLORS ON WOOL.	
BVS2 powder; e. s. aq. (VB and B); sl. s. alc. (B and GBT1); s. conc. H_2SO_4 (OS1). — NaOH: no ppt. (deep Bkn R sol.). — Spectrum: 9.35 (aq.). — Dyeing: Wool in alkaline bath; color developed by sulphuric ac. — Allied brands: Methyl Alkali Blue [G] [O] [M] [DH] [B] [K] [LSch); Alkali Blue 6B [B] [I] [H].	**282**
Purplish-black powder; e. s. aq. (BS1 and GB); e. s. alc. (GB); s. conc. H_2SO_4 (OS1). Air ret., v. slight. — NaOH: no ppt. — Dyeing: SS, WGS.	**283**
←VRS3 powder; e. s. aq. (VB and GBT1); e. s. alc. (GB); s. conc. H_2SO_4 (OYS1). — NaOH: no ppt., (sol. in thick layers v. deep red, green-blue in thin layers). — Spectrum: 8.60 (aq.).— Dyeing: WGS, SS.	**284**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T.15).	(1) Color discharge and return in Tests 8 and 10. (2) Cotton color, (T.5); tannin ppt. (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
285	H_2SO_4...YT1–YT2. NaOH...(f) G; (cl) YGS1. HNO_3...OY.	(1) Dis., 1 min.; pers., BGT1–2; air ret., BGT3. (2) Cotton, white; no tan. ppt. (3) Wool, GB bril.	(1) **CYANOLE ext.** [C]. (2) **CYANOLE FF** [C]. (3) **CYANOLE ext. pat.** [C]. (1) Sodium m-oxydiethyldiaminophenylditolylcarbinoldisulphonate. — (1891).
286	H_2SO_4...YT2. NaOH...←GBS1. HNO_3 ...BG and BGS1.	(1) Dis., 1 min.; pers.-ret., $\frac{1}{2}$; air ret., slight. (2) Cotton, white; no tan. ppt. (3) Wool, ←GB.	(1) **PATENT BLUE LL** [M]. (2) **PATENT BLUE L** [M]. (3) **TETRACYANOLE V** [C]. (4) **TETRACYANOLE SF** [C].
287	H_2SO_4...YT2. NaOH...←GB. HNO_3...BG.	(1) Dis., 1 min.; pers., BGT1–BG→; air ret., BGT2+. (2) Cotton, white; no tan. ppt. (3) Wool, (1) ←GB bril.; (2) GB bril.	(1) **ERIOGLAUCINE A** [G]. (2) **BRILLIANT INDIGO CARMINE sol.** [Lev.]. Acid ammonium diethyldibenzyldiaminotriphenylcarbidridetrisulphonate. — (1896).
			SECTION OF BLUE
288	H_2SO_4...RS1. NaOH...V Bkn (D). HNO_3...BGS1.	(1) Dis., 30 sec.; pers., (1, 2) BGS1; (3) GBT1. (2) Cotton, white; no tan. ppt. (3) Wool, B or BT1.	(1) **BRILLIANT WOOL BLUE G ext.** [By]. (2) **WOOL BLUE N ext.** [By]. (3) **WOOL BLUE SR ext.** [By].
289	H_2SO_4...ORS2. NaOH...(f) VRS2. HNO_3...GBS2.	(1) Dis., 40 sec.; pers., BG. (2) Cotton, BT4; no tan. ppt. (3) Wool, B.	**BRILLIANT WOOL BLUE B ext.** [By].
290	H_2SO_4...ORS2. NaOH...R Bkn (L). HNO_3...OYT1.	(1) Dis., 5 sec.; pers., alm. compl. ret. (2) Cotton, BT3; no tan. ppt. (3) Wool, BT1.	**WATER BLUE 5B** [A].
291	H_2SO_4...ORS1. NaOH...R Bkn (L). HNO_3...OYT1.	(1) Dis., 5 sec.; pers., GBT1–. (2) Cotton, alm. white; no tan. ppt. (3) Wool, BT1.	**HOECHST NEW BLUE** [M]. Calcium or sodium di- or trisulphonate of trimethyltriphenyl-p-rosaniline.
292	H_2SO_4...ORS2. NaOH...R Bkn (L). HNO_3 ...BGT1.	(1) Dis., 5 sec.; pers.-ret., compl. (2) Cotton, BT4; no tan. ppt. (3) Wool, B.	**METHYL BLUE for COTTON** [O]. Sodium triphenyl-p-rosanilinetrisulphonate. — (1862, '66, '75, '92).
293	H_2SO_4...ORS2. NaOH...R Bkn (L).	(1) Compl. dis., 5 sec.; pers., GB→ bril. (2) Cotton, BT2–. (3) Wool, BT1.	**COTTON BLUE IN** [B].
294	H_2SO_4...ORS1. NaOH...OR Bkn (L). HNO_3...OYT1–.	(1) Dis., 5 sec.; pers., GBT1. (2) Cotton, GBT3–. (3) Wool, BT1.	**WATER BLUE 6B** [A]. Sodium, ammonium or calcium triphenylrosaniline and triphenyl- p-rosanilinetrisulphonate with some disulphonate. — (1862).
			NEUTRAL BLUE R [M].
			METHYL BLUE FOR SILK MLB [M].
296	H_2SO_4...O–YO. NaOH...GT2→. HNO_3...Unchanged.	(1) Dis., 15 sec.; pers., BT1. (2) Cotton, BT3–; no tan. ppt. (3) Wool, BT1+ to VBT1+.	(1) **ACID VIOLET 7B** [B]. (2) **ACID VIOLET S7B** [B]. (1) Sodium dimethyldiethyldiphenyltriaminotriphenylcarbinoldisulphonate. — (1884).
297	H_2SO_4...OS1→. NaOH...GT2. HNO_3 ...B Bkn (M).	(1) Dis., 20 sec.; pers.-ret., abt. $\frac{1}{3}$. (2) Cotton, alm. white; no tan. ppt. (3) Wool, BT1→.	**ACID VIOLET 6BS** [C].

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
(1) ←BVS3, (2, 3) VBS2 powders; e. s. aq. (VB, B and GBT2); e. s. alc. (GB and B); s. conc. H_2SO_4 (Y→). — NaOH: no ppt. (RS2 sol., BG in thin layers). — Dyeing: WGS. — Allied brand: Acid Blue 6G (C).	**285**
(1, 2, 4) RVS2, (3) VB-B, S2 powders; e. s. aq. (B and GB); s. alc. (GB); s. conc. H_2SO_4 (YT2). — NaOH: no ppt. — Dyeing: SS, WGS.	**286**
BS2 powder; e. s. aq. (B and GB); e. s. alc. (bril. GB); s. conc. H_2SO_4 (YT2 dull). — NaOH: no ppt. — Spectrum: 8.59 (aq.). — Dyeing: WGS, SS.	**287**
COLORS ON WOOL.	
(1) B Bkn (D), (2) RV-blk., (3) RVS3, powders; e. s. aq. (VB and B); e. s. alc. (GBT1 and B); e. s. conc. H_2SO_4 (1, 2) (←RT1), (3) (RT1→). — NaOH: no ppt. ((1, 2) dark RV, (3) dark BG sol.). — Dyeing: SS, WGS.	**288**
BVS1 powder; e. s. alc. (GBT1 and B); s. aq. (turbid VB and BT1→); s. conc. H_2SO_4 (OR). — NaOH: no ppt., dark V sol. — Dyeing: SS, WGS.	**289**
Dark coppery red lumps; e. s. aq. (VB and B); alm. i. alc.; s. conc. H_2SO_4 (O and OR). — Air ret., sl. — NaOH: no ppt. (dull R-OR sol.). — Spectrum: 9.63 (aq.). — Dyeing: WGS.	**290**
Dark violet to black sl. lustrous flakes; e. s. aq. (VB→ and B); alm. i. alc.; s. conc. H_2SO_4 (OR). — NaOH: no ppt. (dull R→ sol.). — Spectrum: 8.96. — Dyeing: WGS.	**291**
RVS2 powder; e. s. aq. (VB→ and B); s. alc. (GBT1 and VB); s. conc. H_2SO_4 (dull OR). — NaOH: no ppt. (dark R sol.). — Spectrum: 9.23 ± .01. — Dyeing: WGS, SS, CA. — Allied brands: Methyl Blue [C] [t.M]; Methyl Blue for Cotton [K] [M] [I]; Blue-greenish [By]; Bavarian Blue DBF [A]; Helvetian Blue [G]; Diphenylamine Blue [KS]; Pure Blue BS1 [I]; Wool Blue [H].	**292**
V. dark bluish powder w. coppery lustre; e. s. aq. (BVS2, VB and BT2); s. alc. (B); s. conc. H_2SO_4 (OR). — Ppt. tests: H_2SO_4, NaOH (RS1), Cu and Ca, all −; Cr, + compl.— Spectrum: 9.42 (aq.); 8.93 (alc). — Dyeing: WGS, CAl.	**293**
—Spectrum: 9.33 (aq.). — Allied brands: Water Blue 6B [D]; — [B] [By] [t.M] [M] [Sch] [L] [O] [S] [G] [etc.]; China Blue [A] [By] [P] [L] [etc.]; Cotton Blue [L]. Soluble Blue [BSS].	**294**
See No. 195 for description.	
See No. 200 for description.	
(1) RV Bkn (D) powder w. sl. brassy lustre, (2) RVS2 powder; e. s. aq. (BV and VB); e. s. alc. (VB and BT1); s. conc. H_2SO_4 (O and YO). — NaOH: no ppt. (sol. fades slowly to (1) BGT2, (2) GBT2, finally becoming colorless.). — Spectrum: (1) 9.49, (2) 9.52 (aq.); — Dyeing: WGS. — Allied brand: Acid Violet 7B [I].	**296**
RVS3 powder; e. s. aq. (BV and BT1→); e. s. alc. (VB and BT1); s. conc. H_2SO_4 (dull O). — NaOH: no ppt. (fades slowly to turbid BT1 sol.). — Dyeing: WGS.	**297**

No.	**COORDINATION TESTS.** (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) HNO_3 (T. 15).	(1) Color discharge and return in Tests 8 and 10. (2) Cotton color, (T.5); tannin ppt. (T.18c.). (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
298	H_2SO_4...OS1 dull. NaOH...(1) RVS2; (2) RV Bkn (D). HNO_3...BGS1.	(1) Dis., 20 sec.; pers., BS1. (2) Cotton, BT3−; no tan. ppt. (3) Wool, B.	(1) **WOOL BLUE RX [A].** (2) **WOOL BLUE 2BX [A].**
299	H_2SO_4...YO→. NaOH...RV Bkn (L). HNO_3...GS1→.	(1) Dis., 20 sec.; pers., BT2. (2) Cotton, white; no tan. ppt. (3) Wool, BT1+.	**FAST ACID BLUE B [By].**
300	H_2SO_4...OY→. NaOH...GBT1. HNO_3...←BGS1+.	(1) Dis., 20 sec.; pers., ret. alm. compl. (2) Cotton, white; no tan. ppt. (3) Wool, B−.	(1) **BRILLIANT ACID BLUE R ext. [G].** (2) **BRILLIANT MILLING BLUE [C].**
301	H_2SO_4...GYT2. NaOH...B. HNO_3...BG.	(1) Dis., 75 sec.; pers., GBT1–2. (2) Cotton, white; no tan. ppt. (3) Wool, B−.	**ERIOCYANINE A [G].** Sodium tetramethyldibenzylrosanilinedisulphonate. — (1895).
			SECTION OF VIOLET-BLUE
302	H_2SO_4...OS2. NaOH...GBT2. HNO_3...GBS2.	(1) Dis., 20 sec.; pers., ret., abt. ½. (2) Cotton, white; no tan. ppt. (3) Wool, VB.	**ACID VIOLET 6BN [B].** Sodium tetramethyl-p-tolyltriaminoethoxytriphenylcarbinolsulphonate. — (1891).
303	H_2SO_4...OY. NaOH...B. HNO_3...BS2.	(1) Dis., 50 sec.; pers.-ret., abt. ⅓. (2) Cotton, VBT4; no tan. ppt. (3) Wool, VB bril.	**GUINEA VIOLET 6B [A].**
304	H_2SO_4...OYT1→. NaOH...VBS2. HNO_3...BGS1.	(1) Dis., 2 min.; pers., GBT1. (2) Cotton, alm. white; no tan. ppt. (3) Wool, VB.	**GUINEA FAST VIOLET 10B [A].**
305	H_2SO_4...OY. NaOH...VB bril. HNO_3...GBS1–2.	(1) GBT4, dis., 2 min.; pers., BT1. (2) Cotton, VBT4; no tan. ppt. (3) Wool, VB bril.	**KITON VIOLET 12B [I].**
306	H_2SO_4...OY–Y, T1. NaOH...VB. HNO_3...GBS1.	(1) GBT3 dis., 2 min.; pers., BT1. (2) Cotton, white; no tan. ppt. (3) Wool, ←VB.	**FAST ACID VIOLET 10B [By].** Sodium tetramethylethylbenzyl-p-rosanilinedisulphonate. — (1892).
			SECTION OF BLUE-VIOLET
307	H_2SO_4...←YO. NaOH...B Bkn (L). HNO_3...VBS2.	(1) Dis., 30 sec.; pers., BV. (2) Cotton, BVT4, alm. white; no tan. ppt. (3) Wool, BV bril.	(1) **FORMYL VIOLET S4B pat. [C].** (2) **FORMYL VIOLET S4B [C].** Sodium tetraethyldibenzyl-p-rosaniline sulphonate. — (1890).
308	H_2SO_4...OY. NaOH...BT2+⟶. HNO_3...(1) B Bkn (M+); (2) VBS1.	(1) Dis., 20 sec.; pers., ⅔ ret. (2) Cotton, BVT3−; no tan. ppt. (3) Wool, BV bril.	(1) **GUINEA VIOLET 4B [A].** (2) **GUINEA VIOLET S4B [A].** Sodium dimethyldibenzyldiethyltriaminotriphenylcarbinoldisulphonate. — (1889).
309	H_2SO_4...OYS1. NaOH...Alm. compl. dis. HNO_3...GBS1→.	(1) Dis., 20 sec.; pers., VBT1+. (2) Cotton, VT2−; no tan. ppt. (3) Wool, BV bril.	**ACID VIOLET 4BN [B].** Sodium pentamethylbenzyltriaminotriphenylcarbinosulphonate. — (1883).
			SECTION OF RED-VIOLET
310	H_2SO_4...YOS2. NaOH...White. HNO_3...G Bkn (M).	(1) Dis., 15 sec.; pers., abt. ⅓ ret. (2) Cotton, white; no tan. ppt. (3) Wool, RV bril.	**ACID VIOLET 4RS [M].** Sodium dimethylrosanilinetrisulphonate. — (1877).

Appearance (T.2). Solutions (T.3). Precipitations (T.18). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
←RVS2 powder w. feeble coppery lustre; e. s. aq. (1) (VB→ and VT2), (2) (VB→ and BVT2); e. s. alc. (1) (VB and BT1), (2) (VB and ←BT1); s. conc. H_2SO_4 ((1) dull YO), ((2) dull O). — NaOH: no ppt. — Spectrum: (1) *11.77*, (2) *11.76* (aq.); (1) 9.72, (2) 9.79 (aq.). — Dyeing: WGS.	298
←RVS2 cryst. powder w. brassy lustre; e. s. aq. (VB and BT1); s. alc. (B); s. conc. H_2SO_4 (YO). — Ppt. tests: NaOH, Cr, Cu and Ca, all —. — Dyeing: WGS.	299
VS2 powder w. sl. coppery lustre; e. s. aq. (VB→ and ←VBT2); e. s. alc. (BT1 and VB); s. conc. H_2SO_4 (OY). — NaOH: no ppt. — Dyeing: WGS.	300
Dull VRS2 powder; e. s. aq. or alc. (VB→ and GBT1→); s. conc. H_2SO_4 (dull Y). — NaOH: no ppt. — Spectrum: 9.10 (aq.). — Dyeing: WGS, SS.	301
COLORS ON WOOL.	
VRS3 powder; e. s. aq. (BV and VB); e. s. alc. (BT1 and BV); s. conc. H_2SO_4 (←ORS1). — NaOH: — or ± ppt.; (v. pale sol. w. green fluor.). — Spectrum: 9.42 ± .02 (aq.). — Dyeing: WGS, SS. — Allied brand: Acid Violet 6BN [I].	302
RVS2 bril. powder; e. s. aq. (BV→); e. s. alc. (VB and BV); s. conc. H_2SO_4 (Y and OY).— NaOH: no ppt. — Dyeing: WGS.	303
RVS2→ powder w. sl. coppery lustre; e. s. aq. or alc. (BV and BT1); s. conc. H_2SO_4 (dull Y and OYS1). — NaOH: no ppt. — Dyeing: WGS.	304
RVS1→ cryst. powder w. coppery lustre; s. aq. or alc. (BV and BT1); s. conc. H_2SO_4 (OY→). — NaOH: no ppt. — Dyeing: WGS.	305
V Bkn (D) powder; e. s. aq. (BV and BT1); s. alc. (BV and BT1); s. conc. H_2SO_4 (OY and Y). — NaOH: no ppt. — Spectrum: 9.17 (aq.). — Dyeing: WGS.	306
COLORS ON WOOL.	
(1) VR-RV, S2, (2) VRS3 powders w. sl. brassy lustre; e. s. aq. (BV→ and RVT2); e. s. alc. (VBT2 and ←BV); s. conc. H_2SO_4 (YO and OY). — NaOH: no ppt.; VB sol. —Dyeing: WGS. — Allied brands: Acid Violet 6B [G]; Acid Violet 4B ext. [By].	307
(1) V. dark red-violet Bkn powder, (2) bril. RVS2 powder; e. s. aq. (BV→ and RVT2); e. s. alc. (BV and VBT2); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. (VB sol.). — Spectrum: (2) 11.91, 9.80 (aq.). — Dyeing: WGS. — Allied brand; Acid Violet 6B [A].	308
Dark violet powder; s. aq. or alc. (BV and VBT1); s. conc. H_2SO_4 (OY and YO). — NaOH: no ppt. — Spectrum: *9.90*, 12.39 (aq.). — Dyeing: WGS. — Allied brands: Acid Violet 4BN [I]; Acid Violet 6B [By]; Acid Violet 7B [L]; Acid Violet N [M].	309
COLORS ON WOOL.	
YGS3 cryst. sl. lustrous powder; e. s. aq. (R and ←RT1); e. s. alc. (VR-R and VRT); s. conc. H_2SO_4 (YO and OY). — NaOH: no ppt. (RV sol.) — Dyeing: WGS. — Allied brand: Acid Violet 4RS [B].	310

DYES OF GENUS III, AZO AND NITRO

WHOSE COLOR ON WOOL IS DISCHARGED IN TEST 8 TO WHITE OR A TONE LIGHTER

DIVISION A.—DYES COLORING COTTON TO

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
311	Aft-chr. [+] (BG–GB, S2). H_2SO_4...(f) BVS1. NaOH...VRS1.	(1) Compl. dis (½ min.). (2) Cotton, RVT2. (3) Wool, VR.	**CYPRUS BLUE R [A].** (Intro. 1901).
312	Aft-chr. [−]. H_2SO_4...←BGS2 dull. NaOH...←RVS1.	(1) Compl. dis. (1 min.). (2) Cotton, VR→. (3) Wool, VR→.	**JANUS CLARET RED B [M].**
313	Aft-chr. [−]. H_2SO_4...GBT1+. NaOH...VRT2→.	(1) Compl. dis. (10 sec.). (2) Cotton, ←BVT2. (3) Wool, VR–RV, T1.	**CHLORANTINE BLUE 2B [I].** Azo derivative of naphthacetolsulphonic acid (1, 8, 3, 6). — (Intro. 1899).
314	Aft-chr. [−] (RT1 dull). H_2SO_4...GB–BG. NaOH...VRT1.	(1) Compl. dis. (1 min.). (2) Cotton, RVT2→. (3) Wool, VRT1.	**DIAMINE VIOLET N [C].** — Disazo dyestuff: *benzidine* + 2 mol. 2-amino-naphthol(8)-sulphonic ac. (6), (N_2, 1). — (1889).
315	Aft-chr. [−]. H_2SO_4...(f) GB. NaOH...VRS1.	(1) Compl. dis. (½ min.). (2) Cotton, RVT1→. (3) Wool, VR.	**COLUMBIA VIOLET R [A].** (Intro. 1900).
316	Aft-chr. [−] (VR–R dull). H_2SO_4...GBS2. NaOH...R.	(1) Compl. dis. (¾ min.). (2) Cotton, VT2. (3) Wool, VR sl. dull.	**AZO VIOLET [A].** Disazo dyestuff: naphthionic ac., (N_2: NH_2 = 2 : 1) + *dianisidine* + 1-naphtholsulphonic ac.(4), (N_2: OH = 2 : 1). — (1886).
317	Aft-chr. [−]. H_2SO_4...GBS1. NaOH...R–VR, T1.	(1) Compl. dis. (¾ min.). (2) Cotton, RV–VR. (3) Wool, VR.	**BRILLIANT BENZO VIOLET 2R [By] [B].**
318	Aft-chr. [−]. H_2SO_4...GB→. NaOH...RT1 dull.	(1) Compl. dis. (¾ min.). (2) Cotton, RV–VR. (3) Wool, VR–R, T1.	**BENZO FAST VIOLET R [By].** (Intro. 1899).
319	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...VRS1.	(1) Compl. dis. (1½ min.). (2) Cotton, RVS1. (3) Wool, VR–VR, S1.	**RENOL VIOLET [t.M].**
320	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...R–VR, S1.	(1) Y–OY, T3 + dis. (2) Cotton, VRT2. (3) Wool, VR–R, T1+.	**UNION FAST CLARET [Lev.].** Disazo dyestuff: *aminoazo-m-xylene* + naphthol(2)-disulphonic ac.(3, 6), (N_2: OH = 1 : 2). — (1879).
321	Aft-chr. [−]. H_2SO_4...(f) B. NaOH...←R Bkn (M).	(1) OT3 dis. (2) Cotton, V Bkn (M). (3) Wool, ←VR sl. dull.	**BRILLIANT AZURINE 5R [By].** (Intro. 1899).

DERIVATIVES AND OTHER COMPOUNDS

THAN TINT 2 AND IS NOT RESTORED BY AIR OR PERSULPHATE IN TESTS 9 OR 10.

TINT 2 OR A DEEPER TONE IN TEST 5.

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Olive-black powder; e. s. aq. (R–VR and VRT2); s. alc .(←VRT1); s. conc. H_2SO_4 (B→ dull). — Ppt. tests: H_2SO_4, + (←R); NaOH, – ; Ca, + (←R). — Dyeing: WA, dev. to blue by $CuSO_4$.	**311**
Olive-black cryst. powder; s. aq. (R and ←RT2); s. alc. (VR–R, T1 bril.); s. con. H_2SO_4 (G–BG). — Ppt. tests: H_2SO_4, – ; NaOH, + compl.; Cr, – ; Ca, –. — Dyeing: CDv.	**312**
Violet-black powder; v. e. s. aq. (V→ and RVT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, – ; NaOH, – (RS3, VR–R, VRT2); Ca, – . — Dyeing: CD.	**313**
RV Bkn (D) powder w. brassy lustre; e. s. aq. (V→ and RVT2); s. alc. (VRT2); s.con c. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, + compl. (VBS1); NaOH, + compl.; Ca, +. — Dyeing: CD.	**314**
Brown-black powder; e. s. aq. (←R and VR→); sl. s. alc. (VRT2); s. conc. H_2SO_4 (←GB). — Ppt. tests: H_2SO_4, – (VR); NaOH, + ; Ca, + compl. — Dyeing: CD.	**315**
Black cryst. powder w. brassy lustre; e. s. aq. (VR and RV–VR, T2); s. alc. (R–VR bril.); s. conc. H_2SO_4 (GBS1). — Ppt. tests: H_2SO_4, + compl. (VBS1); NaOH, – (RS2, R and ←RT2); Ca, ±. — Dyeing: CD. — Allied brands: Azo Violet [By] [L] [Lev].	**316**
Dark violet-gray powder; e. s. aq. (bril. VRT1); s. alc. (VRT1→); s. conc. H_2SO_4 (←BT1). — Ppt. tests: H_2SO_4, + compl. (RV); NaOH, – ; Cr, + compl. (VR); Cu, + compl. (VR); Ca, + compl. (VR). — Dyeing: CD.	**317**
Dark gray cryst. powder; e. s. aq. (VRT1→); v. d. s. alc. (VRT1); s. conc. H_2SO_4 (BT1). — Ppt. tests: H_2SO_4, + compl. (dark purple); NaOH, – (OR Bkn (D)); Cr, + compl.; Ca, – (OR Bkn (D)). — Dyeing: CD.	**318**
Black powder; e. s. aq. (RVS3, RV, RVT2); sl. s. alc. (VRT1→); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, + compl.; NaOH, + ; Cr, + compl.; Cu, – ; Ca, –. — Dyeing: CD.	**319**
Black powder; s. aq. (R and VRT2); s. alc. (←RT1); s. conc. H_2SO_4 (dull B). — Ppt. tests: H_2SO_4, – ; NaOH, + ; Cr, + compl.; Cu, + compl. — Dyeing: CWD. — Allied brand: Orseille Red [B] [obsolete].	**320**
W. gray to black powder; e. s. aq. (opaque, VR→ and RVT); e. s. alc. (←VRT1–2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cu, + ; NaOH and Ca, – ; Cr, + compl. — Dyeing: CD.	**321**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
322	Aft-chr. [−] (RV Bkn (D)). H_2SO_4...BS2. NaOH...R–VR, S1.	(1) Compl. dis. (½ min.). (2) Cotton, VT1 sl. dull. (3) Wool, ←VR–VR, S1.	**DIANIL BLUE 4R [M].** Disazo dyestuff: a paradiamine + 2 mol. chromatropic ac. (?).—(1890)
323	Aft-chr. [−]. H_2SO_4...B Bkn (M). NaOH...←RT1.	(1) Compl. dis. (⅓ min.). (2) Cotton, V–RV, T2. (3) Wool, VRT1.	**ACETYLENE BLUE 3R [I].** (Intro. 1898).
324	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...R–VR, S1.	(1) Compl. dis. (1 min.). (2) Cotton, RVT2. (3) Wool, VR.	**DIRECT VIOLET B Conc. [SS].**
325	Aft-chr.[−](R Bkn (M)). H_2SO_4...BS1. NaOH...R–VR, S1.	(1) Alm. compl. dis. (1 min). (2) Cotton, *RV*. (3) Wool, VR–R.	**OXAMINE VIOLET [B].** Disazo dyestuff: *benzidine* + 2 mol. 2-amino-5-naphthol-sulphonic ac. (7), (N_2 = 6). — (1893).
326	Aft-chr. [−]. H_2SO_4...(f) BS2. NaOH...R.	(1) Compl. dis. (1½ min.). (2) Cotton, RV: (3) Wool, VR→.	**COLUMBIA VIOLET 2B [A].**
327	Aft-chr. [−] (RS2). H_2SO_4...(f) BS2. NaOH...RS1.	(1) Alm. compl. dis (1½ min.). (2) Cotton, RVT1 sl. dull. (3) Wool, VRS2.	**OXYDIAMINE VIOLET R [C].** (Intro. 1897).
328	Aft-chr. [−] (←RS1). H_2SO_4...(f) B. NaOH...R.	(1) Compl. dis. (1 min.). (2) Cotton, RVT1 sl. dull. (3) Wool, VR–VR, S1.	**OXYDIAMINE VIOLET B [C].** (Intro. 1897).
329	Aft-chr. [−]. H_2SO_4...(f) ←B. NaOH...R.	(1) Compl. dis. (¾ min.). (2) Cotton, RV sl. dull. (3) Wool, VR.	**DIANOL VIOLET R [Lev.].**
330	Aft-chr. [−] (←R Bkn (M)). H_2SO_4...BS2. NaOH...R dull.	(1) Compl. dis. ((1) 1 min., (2) ½ min.). (2) Cotton, (1) RVT1; (2) VT1–RV, T1. (3) Wool, (1) VR sl. dull; (2) VR→ sl. dull.	(1) **DIAMINE HELIOTROPE B [C].** (2) **DIAMINE HELIOTROPE O [C].** (Intro. 1901).
331	Aft-chr. [+] (or Bkn (D)). H_2SO_4...BS2. NaOH...R Bkn (M).	(1) Compl. dis. (1 min.). (2) Cotton, RV Bkn (M). (3) Wool, VRS1 dull.	**OXAMINE BROWN B [B].**
332	Aft-chr. [−]. H_2SO_4...BS2. NaOH...R+.	(1) Compl. dis. (¾ min.). (2) Cotton, RVT2–1. (3) Wool, VR.	**BENZO VIOLET R [By].** (Intro. 1895).
333	Aft-chr. [−]. H_2SO_4...(f) BS2. NaOH...R+.	(1) Compl. dis. (¾ min.). (2) Cotton, RVT1+. (3) Wool, VR→.	**CHLORAZOL VIOLET 3B [H].**
334	Aft-chr. [−] (VR–R, −). H_2SO_4...BS1. NaOH...RVS1.	(1) Compl. dis., 75 sec. (2) Cotton, RV. (3) Wool, VR.	**OXYDIAMINE VIOLET BF [C].**
336	Aft-chr.[−](R Bkn (D)). H_2SO_4...(f) BV Bkn(D). NaOH...VRS2.	(1) Compl. dis. (1 min.). (2) Cotton, VR–RV, T2. (3) Wool, VRS1→.	**DIAMINE CATECHU aus NAPHTYLEN VIOLET [C].**
337	Aft-chr. [−] (RT2 dull). H_2SO_4....BV Bkn (L). NaOH...ROT1.	(1) Compl. dis. (⅓ min.). (2) Cotton, BVT2. (3) Wool, VRT2+→, sl. dull.	**DIPHENYL BLUE RR [G].** (Intro. 1899).
338	Aft-chr. [−]. H_2SO_4...(f) VS1. NaOH...VR.	(1) Compl. dis. (25 sec.). (2) Cotton, RVT2+. (3) Wool, VR–RV.	**CHLORANTINE LILAC B [I].**
339	Aft-chr. [−]. H_2SO_4...VS1→. NaOH...VRT Bkn (M).	(1) Compl. dis. (½ min.). (2) Cotton, RVT2. (3) Wool, VRT1.	**CHLORAMINE VIOLET R [By].** Disazo primuline derivative. — (Intro. 1899).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Gray-black cryst. powder; e. s. aq. (RV→ and RVT2→); i. alc.; s. conc. H_2SO_4 (B→). — Ppt. tests: H_2SO_4, –; NaOH, – (RS2); Ca, + compl. — Dyeing: CD. — Allied brands: Dianil Blue R, 2R, 3R, [M].	**322**
Dull black powder; e. s. aq. (RV and RVT2→); sl. s. alc. (←VRT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (←RT2 on dilution); Cr, + compl.; Ca, –. — Dyeing: CD.	**323**
Dull black powder; e. s. aq. (RV–VR); sl. s. alc. (VRT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (VR on dilution; Cr, + compl.; Ca, + compl. (VR). – Dyeing: CD.	**324**
Alm. black cryst. powder; e. s. aq. (VR); alm. i. alc. (VRT2); s. conc. H_2SO_4 (B). — Ppt. tests: tannin, –; H_2SO_4, + compl. (←RV); NaOH, + compl. (VR→); Cr, + compl. (dark violet); Cu, –; Ca, –. — Dyeing: CD.	**325**
Dull gray-black powder w. brassy lustre; s. aq. (←R and VRT2); sl. s. alc. (VR–R, T2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, + compl. NaOH, – (RS2 – ←RT2); Ca, +. — Dyeing: CD.	**326**
Brown-black cryst. powder w. brassy lustre; e.s. aq. (←R and VRT2); sl. s. alc. (RT2); s. conc. H_2SO_4 (B→). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (RS2); Ca, + compl. — Dyeing: CD.	**327**
Y Bkn (D) cryst. powder w. brassy lustre; e. s. aq. (VR→ and VRT2); sl. s. alc. (VRT2); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (RS2 and ←RT2); Ca, + compl. — Dyeing: CD.	**328**
Violet-black cryst. powder; s. aq. (←RS1, VR→ and ←VRT2); sl. s. alc. (VRT2→); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, –; NaOH, – (R); Ca, –. — Dyeing: CD.	**329**
Violet-black cryst. powder w. brassy lustre; e. s. aq. (VR→ and ←VRT2); sl. s. alc. (VRT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, +; NaOH, – (RS1; RS2); Ca, –. — Dyeing: CD; CDv. w. β-naphthol for navy blues.	**330**
Green-black powder; alm. i. c. aq.; s. h. aq. (R and ORT2 sl. dull); v. sl. s. alc. (RT2 –, dull); s. conc. H_2SO_4 (BV). — Dyeing: CD.	**331**
Black cryst. powder w. brassy lustre; e. s. aq. (VR→ and ←VRT2); sl. s. alc. (VRT1); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (RS1 and RT2); Ca, +. — Dyeing: CD.	**332**
Violet-black cryst. powder w. brassy lustre; s. aq. (←R and VRT2); sl. s. alc. (←RT2); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, –; NaOH, – (R); Ca, +. — Dyeing: CD.	**333**
Dark indigo-blue powder; e. s. aq. (BV, V and VT2); s. alc. (←RT1); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all + compl.— Dyeing: CD.	**334**
Black powder; e. s. aq. (red); s. alc. (red); s. conc. H_2SO_4 (VBS1). — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl. (V); Cu, – (VR, v. dark); Ca, –. — Dyeing: CD.	**336**
Gray-black cryst. powder; e. s. aq. (←V and RVT2); sl. s. alc. (←VRT2); s. conc. H_2SO_4 (B→). — Ppt. tests: H_2SO_4, +; NaOH, – (RS1 and RT2→); Ca, + compl. — Dyeing: CD.	**337**
Black powder; e. s. aq. (VR→ and ←VRT2); s. alc. (VRT1→, bril.); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, +; NaOH, – (redder); Cr, + compl.; Ca, +. — Dyeing: CD.	**338**
Violet cryst. powder, sl. brassy lustre; e. s. aq. (VR→ and ←VRT2); sl. s. alc. (VRT1); s. conc. H_2SO_4 (V→). — Ppt. tests: H_2SO_4, NaOH and Ca, all –. — Dyeing: CD.	**339**

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
340	Aft-chr. [−]. H_2SO_4...(f) VS1. NaOH...VR–VRS1.	(1) Compl. dis. (½ min.). (2) Cotton, VRT2. (3) Wool, VRT1.	**DIAMINE ROSE BD [C].** Azo dyestuff: *dehydrothio-p-toluidine* + 1-naphthol-8-chlor-3,6-disulphonic ac. — (1893).
341	Aft-chr. [−]. H_2SO_4 ...(f) RV Bkn (D). NaOH...ORT1 dull.	(1) Compl. dis. (½ min.). (2) Cotton, VR. (3) Wool, VRT1.	**DIAZO BORDEAUX 7B [By].**

SECTION OF RED

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
342	Aft-chr. [+](ROT1 dull). H_2SO_4...(f) BT1→. NaOH...ORT1 dull.	(1) Compl. dis. (1 min.). (2) Cotton, VRT2. (3) Wool, RT1.	**CONGO RUBINE [A].** Disazo dyestuff: naphthionic ac. (N_2: NH_2 = 2 : 1) + *benzidine* + 2-naphtholsulphonic ac.(8), (N_2 = 1). — (1891).
343	Aft-chr. [+] (←OS1). H_2SO_4...(f) VBS1. NaOH...←OR.	(1) Compl. dis. (1½ min.). (2) Cotton, RT2. (3) Wool, R.	**DIAMINE FAST RED F [C].** Disazo dyestuff: salicylic ac., (N_2: OH = 4 : 1) + *benzidine* + 2-aminonaphthol(8)-sulphonic ac. (6), (N_2 = 1). — (1889).
344	Aft-chr. [+] YO Bkn (D). H_2SO_4...(f) BVS1. NaOH...RS1.	(1) Compl. dis. (1 min.). (2) Cotton, RV Bkn (M). (3) Wool, RS2→, uneven.	**DIAZETHYL BLACK B [By].** (Intro. 1900).
345	Aft-chr. [+](O Bkn (D)). H_2SO_4...(f) BVS1. NaOH...ORS2.	(1) Compl. dis. (90 sec.). (2) Cotton, R Bkn (L). (3) Wool, R Bkn (M).	**RENOL BROWN MB CONC. [t.M.]**
347	Aft-chr. [+]; (1) ←YO Bkn (M), (2) O – YO Bkn (M). H_2SO_4...V Bkn (D). NaOH...R Bkn (M).	(1) Compl. dis., 30 sec. (2) Cotton, BT2→. (3) Wool, (1, 2) R Bkn (L); (1) RV Bkn (D).	(1) **ZAMBESI PURE BLUE 4B [A].** (2) **ZAMBESI PURE BLUE R [A].**
348	Aft-chr. [+] (O – OY Bkn (L)). H_2SO_4...V gray (v.D). NaOH...YO Bkn (D)–gray.	(1) Compl. dis., 25 sec. (2) Cotton, BV Bkn (M). (3) Wool, ←R Bkn (L); black.	**NAPHTHOGENE BLUE 2R [A].** (Intro. 1902).
349	Aft-chr.[+](OY Bkn(M)). H_2SO_4...(f) G gray (D). NaOH...(f) G gray (L).	(1) Compl. dis., 50 sec. (2) Cotton, RV Bkn (M), v. dull. (3) Wool, R–VR Bkn (L).	**SULPHON DARK BROWN [By].**
350	Aft-chr. [−]. H_2SO_4...(f) VRS1. NaOH...(f) VRS1.	(1) Compl. dis. (45 sec.). (2) Cotton, ←RT2. (3) Wool, RT1+, v bril.	**ERIKA 2GN [A].**
351	Aft-chr. [−]. H_2SO_4...VR–R. NaOH...←R.	(1) Compl. dis. (1 min.). (2) Cotton, ←RT2. (3) Wool, R.	**DIRECT SCARLET B Conc. [K].** Azo dyestuff: *Dehydrothiotoluidine-sulphonic ac.* + naphthol(1)-sulphonic ac.(4) (?). — (Intro. 1895).
352	Aft-chr. [−]. H_2SO_4...(f) VR. NaOH...RS2.	(1) Compl. dis. (1 min.). (2) Cotton, ←RT2. (3) Wool, R bril.	**GERANINE G [By].** Azo dyestuff: " Probably " *dehydrothiotoluidine* (or *xylidine*) + 1,8-dioxynaphthalenesulphonic ac.(4). — (1890).
353	Aft-chr. [−]. H_2SO_4...VR–R. NaOH...←R.	(1) Alm. compl. dis. (2) Cotton, ←RT2. (3) Wool, R bril.	**THIAZINE RED R [B].** Azo dyestuff: *primuline* + naphthol (1)-sulphonic ac.(4).—(Intro. 1894).
354	Aft-chr. [−]. H_2SO_4...VRS2. NaOH...RS2.	(1) Compl. dis. (1 min.). (2) Cotton, ←RT2. (3) Wool, R.	**DIAMINE ROSE [C].** Dehydrothio-p-toluidine + 1-naphthol-8-chlor-3,6-disulphonic ac., (N. = 2). — (1893).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
RS2 powder; e. s. aq. (R and VRT); sl. s. alc. (RT); s. conc. H_2SO_4 (VR, bril.). — Ppt. tests: tannin, – ; H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, – ; Ca, –. — Dyeing: CD.	**340**
Bkn. violet-red powder; e. s. aq. (R and VRT); i. alc.; s. conc. H_2SO_4 (RT2). — Ppt. tests: tannin, – ; H_2SO_4, + compl.; NaOH, + ; Cr, + compl.; Cu, + alm. compl.; Ca, –. — Dyeing: CDv.	**341**
COLORS ON WOOL.	
Olive-black powder; s. aq. (R and VR→ and VRT2); s. alc. (RT2 and OR); s. conc. H_2SO_4 (B→). — Ppt. tests: tannin, – ; H_2SO_4, + compl.; NaOH, + (VR–RV); Cr, + compl. (BVS2); Cu, + (BV); Ca, + (V–RV). — Dyeing: CD.	**342**
RS2→ powder; d. s. c. aq., compl. s. h. aq. (R→, RO dull, and RO–O, T2); s. alc. (RT2 and ←OR); s. conc. H_2SO_4 (←VB). — Ppt. tests: H_2SO_4, NaOH, Cr and Ca, all + compl.; Cu and tannin. — Dyeing: CD, WCh.	**343**
Olive-black micro-cryst. powder; s. aq. (R and ←RT2); s. alc. (R→); s. conc. H_2SO_4 (BVS1→). — Ppt. tests: H_2SO_4, + compl. (VBS1); NaOH, + compl. (←R); Cr, + compl. (BVS2); Cu, + compl. (BVS2); Ca, + (VRS1). — Dyeing: CDv. (T.20, blue-black w. wool and VB Bkn (v.D) is cotton).	**344**
Brown-black powder; e. s. aq. (turbid R and RT2 Bkn); e. s. alc. (R); s. conc. H_2SO_4 (BV).— Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl. — Dyeing: CD.	**345**
Black powder; e. s. aq. (VR–RV and RVT2); s. alc. ((1) BV Bkn (M), (2) VR dull); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**347**
Black powder; e. s. aq. (V and VT2); e. s. alc. (V); s. conc. H_2SO_4 (BG Bkn). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all – . — Dyeing: CDv. w. β-naphthol.	**348**
Dark gray-black powder; e. s. aq. (opaque and O Bkn (D) – YO Bkn (L)); s. alc. (RS2 and ORT2 dull); s. conc. H_2SO_4 (G gray (L)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – ; Cu, + or ±. — Dyeing: WGS.	**349**
Brown powder; e. s. aq. (OR and ←RT2); sl. s. alc. (RT2); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH –. — Dyeing: CD.	**350**
RS2 powder; e. s. aq. (red); e. s. alc. (OR); s. conc. H_2SO_4 (R) –.— Ppt. tests: tannin, – ; H_2SO_4, + ; NaOH, – ; Cr, + compl.; Cu, – ; Ca, –. — Dyeing: CD.	**351**
RS2 powder; e. s. aq. (red); sl. s. alc.(RT2); s. conc. H_2SO_4(VR–R).— Ppt. tests: tannin, H_2SO_4, NaOH, all – ; Cr, + compl.; Cu, + alm. compl.; Ca, +. — Dyeing: CD.	**352**
RS2 powder; e. s. aq. (red); sl. s. alc. (RT2); s. conc. H_2SO_4 (←R). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, +. — Dyeing: CD.	**353**
Red powder; e. s. aq. (red); alm. i. alc.; s. conc. H_2SO_4 (VR bril.). — Ppt. tests: tannin, H_2SO_4 and NaOH, all – ; Cr and Ca, + compl.; Cu, –. — Dyeing: CD.	**354**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [–]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
355	Aft-chr. [–]. H_2SO_4 . . . (f) VR–R, S1. NaOH . . . R.	(1) YT2– dis. (1 min.). (2) Cotton, RT1–2. (3) Wool, R.	**RESOPHENINE 10B [ClCo].**
356	Aft-chr. [–]. H_2SO_4 . . . (f) VR. NaOH . . . R→.	(1) YT1–2 dis., (sol. YT1–2). (2) Cotton, RT1. (3) Wool, R.	**DIAZO BRILLIANT SCARLET 3B EXT. [By].**
357	Aft-chr. [–]. H_2SO_4 . . . RS1. NaOH . . . VR–R.	(1) Compl. dis. (1⅛ min.). (2) Cotton, VRT1. (3) Wool, R.	**BENZO RHODULINE RED 3B (By).** (Intro. 1900).
358	Aft-chr. [–]. H_2SO_4 . . . ←R. NaOH . . . R Bkn (M).	(1) Compl. dis. (½ min.). (2) Cotton, ←RT2. (3) Wool, RT1+.	**TITAN PINK [H].** Azo dyestuff: *dehydrothiotoluidine* + naphthol(2)-sulphonic ac.(6).
359	Aft-chr. [–]. H_2SO_4 . . . (f) ←R Bkn (D). NaOH . . . R Bkn (M).	(1) Compl. dis. (½ min.). (2) Cotton, VR Bkn (M). (3) Wool, (1) R Bkn (D)→; (2) ←R Bkn (D).	(1) **DIAMINE BROWN MR [C].** (2) **PLUTO BROWN R [By].**
360	Aft-chr. [–]. H_2SO_4 . . . (f) ORT1. NaOH . . . ←ORS2.	(1) Pale yel. dis., (1⅛ min.). (2) Cotton, RT1–VR,T1. (3) Wool, R.	**BENZO RED 12B Pat. [By].**
361	Aft-chr. [–]. H_2SO_4 . . . (f) ORT1. NaOH . . . ORT1→.	(1) Compl. dis. (½ min.). (2) Cotton, VRT1. (3) Wool, RT1.	**BENZO RHODULINE RED B [By].** (Intro. 1900).
362	Aft-chr. [–]. H_2SO_4 . . . BG Bkn (M). NaOH . . . RT2.	(1) Compl. dis. (1 min.). (2) Cotton, VRT1. (3) Wool, RT2.	**BENZOPURPURINE 10B [By].**
363	Aft-chr. [–] RT1 sl. dull. H_2SO_4 . . . (f) BGS2. NaOH . . . (f) RVS1.	(1) Compl. dis. (2) Cotton, RT1. (1) Wool, R+ – OR.	**JANUS RED B [M].** Disazo dyestuff: *m-aminophenyltrimethylammonium chloride* + (N_2 = 6), *m-toluidine* + β-naphthol, (N_2 : OH = 1 : 2). — (1896).
364	Aft-chr. [–]. H_2SO_4 . . . (f) GBS1. NaOH . . . VRS1.	(1) Alm. compl. dis. (35 sec.). (2) Cotton, VRT2. (3) Wool, R bril.	**BRILLIANT GERANINE B [By].** (1894).
365	Aft-chr. [–]. H_2SO_4 . . . GBS2. NaOH . . . R.	(1) Alm. comp. dis. (1½ min.). (2) Cotton, VRT2. (3) Wool, R bril.	(1) **DIAMINE BRILLIANT BORDEAUX R [C].** (2) **BENZO FAST RED 9BL [By].** (3) **DIANIL CRIMSON B [M].**
366	Aft-chr. [–] ROT→. H_2SO_4 . . . GBT1 sl. dull. NaOH . . . RT2.	(1) Compl. dis. (1 min.). (2) Cotton, VRT1. (3) Wool, RT2.	**BRILLIANT PURPURINE 10B [A].**
367	Aft-chr. [–]. H_2SO_4 . . . (f) GBS1→. NaOH . . . RT1+.	(1) ⅜ dis. in 2 min. (2) Cotton, VR–R,T1. (3) Wool, R.	**DIANIL FAST SCARLET 8BS [M].**
368	Aft-chr. [–]. H_2SO_4 . . . GB. NaOH . . . ORT1.	(1) ROT4 dis. (2) Cotton, RV–R,T2. (3) Wool, RT1– →.	**TOLUYLENE RED [O].** Disazo dyestuff: *dichlorbenzidine* + 2 mol. 2-aminonaphthalene-disulphonic ac.(3,6), (N_2 = 1). — (1896).
369	Aft-chr. [–]. H_2SO_4 . . . (f) BT1. NaOH . . . VRS2.	(1) Compl. dis. (½ min.). (2) Cotton, VRT1. (3) Wool, R–VR.	**BRILLIANT GERANINE 3B [By].** Probably an azo deriv. of dehydrothiotoluidine. — (Intro. 1894).
370	Aft-chr. [–]. H_2SO_4 . . . (f) BT1. NaOH . . . VRS2.	(1) Compl. dis. (1 min.). (2) Cotton, VR. (3) Wool, R.	**BENZO BORDEAUX 6B [By].** (Intro. 1900).
371	Aft-chr. [–]. H_2SO_4 . . . (f) BS2–black. NaOH . . . (f) VRS1.	(1) OYT3 dis. (2) Cotton, ←RT2+. (3) Wool, R→.	**CLOTH RED B [By].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
RS2 powder; e. s. aq. (red); e. s. alc. (OR); s. conc. H_2SO_4 (R→). — Ppt. tests: tannin – ; H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**355**
Dull red powder; v. sl. s. c. aq.; e. s. hot aq. (red); s. alc. (OR); s. conc. H_2SO_4 (VRT1 bril.). — Ppt. tests (made with aq. sol. fully saturated at 25°): H_2SO_4, NaOH, Cr, Cu and Ca, all + compl. — Dyeing: CDv.	**356**
Broken red-violet powder; e. s. aq. (red and violet-red); s. alc. (OR); s. conc. H_2SO_4 (VRT1 bril.). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**357**
RS2 powder; e. s. aq. (red); i. alc.; s. conc. H_2SO_4 (VRT1 bril.).— Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**358**
Black powder; sl. s. c. aq.; e. s. hot aq. (red Bkn and orange Bkn); sl. s. alc. (RT); s. conc. H_2SO_4 (ORS1). — Ppt. tests: tannin, + ; H_2SO_4, + alm. compl.; NaOH, – ; Cr, + alm. compl.; Cu, + alm. compl.; Ca, –. (Tests made w. aq. sol. saturated at 25°). — Dyeing: CD.	**359**
Broken red powder; e. s. aq. (red and VRT); s. alc. (ROT); s. conc. H_2SO_4 (←O). — Ppt. tests: tannin, H_2SO_4, Cu and Ca, all – ; NaOH, + ; Cr, + compl. — Dyeing: CD.	**360**
Broken violet-red powder; e. s. aq. (red and VRT1); s. alc. (RO); s. conc. H_2SO_4 (RO). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**361**
Brown-red powder; e. s. aq. (red); sl. s. alc. (orange); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, – ; H_2SO_4, + compl. (GBS1); NaOH, + ; Cr, + compl.; Cu, + compl. (VS2); Ca, ±. — Dyeing: CD.	**362**
R Bkn (D) cryst. powder; e. s. aq. (OR and RT2); s. alc. (OR→); s. conc. H_2SO_4 (←BGS1).—Ppt. tests: H_2SO_4, + compl.; NaOH, + compl. (BVS1); Cr and Ca, + compl. — Dyeing: SA, CDv. (Test 20, –).	**363**
RS2 powder; e. s. aq. (R and VRT); sl. s. alc. (RT); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD; topping on Turkey Red.	**364**
Reddish-black powder; e. s. aq. (red); v. sl. s. alc. (←RT2); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, – ; H_2SO_4, ± (BS2); NaOH, + ; Cr, + compl.; Cu, – ; Ca, +. — Dyeing: CD.	**365**
←RV Bkn (M) powder; s. aq. (RT1 and VRT2); sl. s. alc. (RT2); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, + compl. (←VRS1); NaOH and Cr, + compl.; Ca, +. — Dyeing: CD.	**366**
RS1 powder; e. s. aq. (red); alm. i. alc.; s. conc. H_2SO_4 (GB).— Ppt. tests: tannin, – ; H_2SO_4, – ; NaOH, + alm. compl.; Cr, Cu and Ca, + compl. — Dyeing: CD.	**367**
VR Bkn powder; e. s. aq. (red); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, – ; H_2SO_4, – ; NaOH, + ; Cr, + compl.; Cu, + ; Ca, + alm. compl. — Dyeing: CD. — Allied brand: Dianol Red extra [Lev.].	**368**
RS2 powder; e. s. aq. (R and VRT); s. alc. (red); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**369**
Brownish-black powder; e. s. aq. (R and VRT); s. alc. (RT); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, – ; H_2SO_4, + ; Cr, + alm. compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**370**
RS2 powder; e. s. aq. (R and VRT); s. alc. (RT→); s. conc. H_2SO_4 (B – BS1). — Ppt. tests: tannin, H_2SO_4 and NaOH, – ; Cu ± ; Cr and Ca, + compl. — Dyeing: WCh.	**371**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
372	Aft-chr. [−]. H_2SO_4 . . . (f) BS2–black. NaOH (f) ←VRS1.	(1) Compl. dis. (1 min.). (2) Cotton, ←RT2. (3) Wool, R→.	**CLOTH RED G [By].** Disazo dyestuff: *aminoazobenzene* + naphthol(1)-sulphonic ac.(4), (N_2: OH = 2 : 1).—(1883).
373	Aft-chr. [−]. H_2SO_4 . . . (f) BT1. NaOH . . . VRS2.	(1) Compl. dis. (50 sec.). (2) Cotton, RT1–2. (3) Wool, R.	**BENZO FAST RED L [By].** (Intro. 1900).
374	Aft-chr. [−]. H_2SO_4 . . . (f) BS1. NaOH . . . R.	(1) YOT2 dis. (2) Cotton, VR Bkn (M). (3) Wool, R Bkn (M).	**FORMIC BROWN R [G].**
375	Aft-chr. [−] (ROT1). H_2SO_4 . . . (f) ←B. NaOH . . . RT1+→.	(1) Compl. dis. (2) Cotton, VRT1. (3) Wool, RT1+.	**BENZO PURPURINE 10B Conc. [SS].**
376	Aft-chr. [−]. H_2SO_4 . . . (f) BS1. NaOH . . . R→.	(1) Compl. dis. (1 min.). (2) Cotton, VRT1. (3) Wool, RT1.	(1) **COLUMBIA BORDEAUX B [A].** (2) **DIAMINE BORDEAUX B [C].**
377	Aft-chr. [−]. H_2SO_4 . . . (f) B. NaOH . . . R.	(1) Compl. dis. (1 min.). (2) Cotton, VR–R, T1. (3) Wool, R.	(1) **COTTON CORINTH G [B].** (2) **CONGO CORINTH G [A].** (3) **CONGO CORINTH G [By].** (4) **CONGO CORINTH G Conc. [SS].** — Disazo dyestuff: naphthionic ac., (N_2: NH_2 = 2 : 1) + *benzidine* + naphthol(1)-sulphonic ac.(4), (N_2: OH = 1 : 2).—(1886)
378	Aft-chr. [−]. H_2SO_4 . . . (f) BT1 dull. NaOH . . . R Bkn (M).	(1) Compl. dis. (1 min.). (2) Cotton, VR Bkn (D). (3) Wool, R Bkn (M), approx.	**BENZO BROWN RC [By].** (Intro. 1901).
379	Aft-chr. [−] RT2 dull. H_2SO_4 . . . (f) ←B. NaOH . . . ←R.	(1) Compl. dis. (2) Cotton, RV sl. dull. (3) Wool, ←RT1 sl. dull.	**DIRECT VIOLET RR Conc. [SS].**
380	Aft-chr. [−] (ORT1). H_2SO_4 . . . (f) B. NaOH . . . RT1.	(1) Compl. dis.; air, v. sl. ret. (2) Cotton, VRT1. (3) Wool, RT1→.	**OXAMINE RED 3B [B].**
381	Aft-chr. [−]. H_2SO_4 . . . (f) (1) BS1→; (2) BS1. NaOH . . . OR.	(1) OYT2 dis. (2) Cotton, RV. (3) Wool, ←R dull.	**CONGO CORINTH B [A].** **CONGO CORINTH B [By].** — Disazo dyestuff: naphthionic ac., [N_2 = 2] + *o-tolidine* + naphthol-(1)-sulphonic ac.(4), [N_2 = 2]. — (1886).
382	Aft-chr. [−]. H_2SO_4 . . . (f) ←VB. NaOH . . . VRS2.	(1) YT3 dis. (2) Cotton, RT2 dull. (3) Wool, RT1.	**CLOTH RED GA [A].** Disazo dyestuff: *o-aminoazotoluene* + naphthol(2)-sulphonic ac.(6), (N_2 : OH = 1 : 2). — (1879).
383	Aft-chr. [−]. H_2SO_4 . . . (f) VBS1. NaOH . . . RS1.	(1) Compl. dis. (1¼ min.). (2) Cotton, R–VR, T1. (3) Wool, R.	**BENZO FAST SCARLET 8BS [By].** (Intro. 1901).
384	Aft-chr. [−]. H_2SO_4 . . . (f) BVS2. NaOH . . . R–OR.	(1) YT2 + dis. (2) Cotton, VRT1. (3) Wool, R.	**DIAZO BRILLIANT SCARLET 6B EXT. [By].**
385	Aft-chr. [−]. H_2SO_4 . . . (f) BVS2. NaOH . . . ORS2.	(1) Compl. dis. (40 sec.). (2) Cotton, ORT2. (3) Wool, R.	**PALATINE CHROME RED R [B].**
386	Aft-chr. [−]. H_2SO_4 . . . (f) V Bkn (D). NaOH . . . RT1 dull.	(1) Compl. dis. (1 min.). (2) Cotton, VRT2. (3) Wool, R–VR, T1.	**BENZO FAST PINK 2BL [By.]** Disazo dyestuff. (1902).
387	Aft-chr. [−]. H_2SO_4 . . . S1. NaOH . . . OR–R, Bkn (M).	(1) Compl. dis. (1 min.). (2) Cotton, R–VR, T2. (3) Wool, R–OR, T1.	**DIAMINE ROSE GGN pat. [Math].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
RS2 powder; e. s. aq. (R→ sl. turbid and RT2); s. alc. (OR); s. conc. H_2SO_4 (BS1). — Ppt. tests: tannin, – ; H_2SO_4, + ; NaOH, – (VR→); Cr, + compl.; Cu and Ca, +. — Dyeing: WCh. — Allied brands: Cloth Red R [D]; Fast Red 7B [NJ].	372
RS2 powder; e. s. aq. (red); sl. s. alc.(RT); s. conc. H_2SO_4 (GB).— Ppt. tests: tannin, – ; H_2SO_4, + (RVS1); NaOH, + ; Cr, + alm. compl.; Cu, + ; Ca, +. — Dyeing: CD.	373
Slate-black powder; e. s. aq. (turbid Bkn red); sl. s. alc. (RT); s. conc. H_2SO_4 (B). — Ppt. tests: tannin, – ; H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, + ; Ca, ±.— Dyeing: CD followed by after-treatment w. formic aldehyde.	374
Very dark brown powder; e. s. aq. (turbid red and VRT2); s. alc. (R–OR, T1); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, + compl. (GBS2); NaOH, ± Cr, + ; compl. (RV Bkn (D)); Ca, +.— Dyeing: CD.	375
Black powder; e. s. aq. (dull red); s. alc. (RT); s. conc. H_2SO_4 (B). — Ppt. tests: tannin, – ; H_2SO_4, + compl. (BVS2); NaOH, + ; Cr, + (VRS2); Cu, + ; Ca, +. — Dyeing: CD.	376
Dark brown powder; e. s. aq. (←R and VRT2); sl. s. alc. (RT2); s. conc. H_2SO_4 (B). — Ppt. tests: tannin, – ; H_2SO_4, + alm. compl. (VBS2); NaOH, – ; Cr and Ca, + compl.; Cu, –. — Dyeing: CD. — Allied brands: Congo Corinth G [L] [Lev.] [S].	377
Slate-black powder; e. s. aq. (Bkn red); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, – ; H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, – ; Ca, + (slow). — Dyeing: CD.	378
Black powder; e. s. aq. (VR→ and VRT2); sl. s. aq. (VRT2); s. conc. H_2SO_4 (GB→). — Ppt. tests: H_2SO_4, + compl. (RV–RVS1); NaOH, Cr and Ca, all + compl. — Dyeing: CD.	379
V. d. brown powder; e. s. aq. (R and VRT2); s. alc. (R); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all – ; Cr, +. — Dyeing: CD.	380
Olive-black powder; e. s. aq. (VR→ and VRT2); e. s. alc. (←RT1 bril.); s. conc. H_2SO_4 (B→). — Ppt. tests: H_2SO_4, + (RVS1); NaOH, ± (RS1 and ROT2); Cr, + compl.; Cu, + ; Ca, +. — Dyeing: CD. — Allied brands: Congo Corinth B, [L], [Lev], [S].	381
RS1 powder; sl. s. c. aq.; s. hot aq. (red); s. alc. (OR); s. conc. H_2SO_4 (B–VB). — Ppt. tests (made w. aq. sol. saturated at 25°): tannin, – ; H_2SO_4, – ; NaOH, + ; Cr, + compl; Cu, – ; Ca, + compl. — Dyeing: WCh. — Allied brands: Cloth Red G [O]; Cloth Red G extra [By].	382
RS2 powder; e. s. aq. (red and VRT); s. alc. (ORT); s. conc. H_2SO_4 (VB). — Ppt. tests; tannin, – ; H_2SO_4, – ; NaOH, – ; Cr, + compl.; Cu, – ; Ca, –. — Dyeing: CD, WGA.	383
RS3 powder; e. s. aq. (R turbid and VRT); s. alc. (OR); s. conc. H_2SO_4 (BV). — Ppt. tests: tannin, – ; H_2SO_4, NaOH, Cr and Cu, + compl.; – Ca, + alm. compl. — Dyeing: CD.	384
VR Bkn powder; e. s. aq. (R); v. sl. s. alc. (RT2); s. conc. H_2SO_4 (BV→). — Ppt. tests: tannin, – ; H_2SO_4, + ; NaOH, – ; Cr, Cu and Ca, all + compl. — Dyeing: WGSCh.	385
RS2 powder; e. s. aq. (R and VRT); i. alc.; s. conc. H_2SO_4 (BV–B Bkn T). — Ppt. tests: tannin, – ; H_2SO_4, – (VRS1); NaOH, – ; Cr, + compl.; Cu, – ; Ca, +. — Dyeing: CD.	386
RS2→ powder; e. s. aq. (R and VRT); s. alc. (OR); s. H_2SO_4 (RV). — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	387

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
388	Aft-chr. [−] OR Bkn (M). H_2SO_4...(f) V. NaOH...OR-R, S1.	(1) Compl. dis. (1 min.). (2) Cotton, R-VR,T2. (3) Wool, R-OR,T1.	**CHROME FAST RED B [A].** (Intro. 1902).
389	Aft-chr. [−]. H_2SO_4...(f) RV. NaOH...VRS2.	(1) Compl. dis. (½ min.). (2) Cotton, VRT2. (3) Wool, ←R.	**DIAMINE ROSE B EXT. [C].** *Dehydro-p-thiotoluidine* + 8-chlor-naphthol(1)-disulphonic ac.(3,6). (N_2 : OH = 7 : 8). — (1893).
390	Aft-chr. [−]. H_2SO_4...(f) RV-VR. NaOH...VRS2.	(1) Compl. dis. (½ min.). (2) Cotton, VRT2. (3) Wool, ←RT1+.	**EUREKA B EXTRA [A].**
			SECTION OF ORANGE-RED
391	Aft-chr. [+] (YO Bkn (M)). H_2SO_4...YO Bkn (M). NaOH...OT1 dull.	(1) Alm. compl. dis. (2) Cotton, ORT2 dull. (3) Wool, OR Bkn (M).	**BROWN SDM [P].**
392	Aft-chr. [+] (O Bkn (M)). H_2SO_4...G Bkn (M). NaOH...VR-R,T1 dull.	(1) Compl. dis. (½ min.). (2) Cotton, VR-R,T1. (3) Wool, ORT1 sl. dull.	**BENZO NITROL BORDEAUX G [By].** (Intro. 1900).
393	Aft-chr. [+] (O Bkn (M-L)). H_2SO_4...BVS1. NaOH...RO.	(1) Fair dis. (¾ min.). (2) Cotton, VRT1. (3) Wool, ORT1 sl. dull.	**TOLUYLENE BORDEAUX B [O].**
394	Aft-chr. [−]. H_2SO_4...VR. NaOH...OR.	(1) Compl. dis. (½ min.). (2) Cotton, RT2. (3) Wool, OR−.	**BENZO FAST SCARLET 4BA pat. [By].** — (1907).
395	Aft-chr.[−](OR-ORS1). H_2SO_4...(f) ←RS1. NaOH...OR.	(1) Alm. compl. dis. (2) Cotton, RT2. (3) Wool, OR bril.	**ANTHRACENE RED [By].** Disazo dyestuff: salicylic ac. (N_2 : OH = 4 : 1) + *o-nitrobenzidine* + 1-naphtholsulphonic ac.(4), (N_2 : OH = 2 : 1). — (1892).
396	Aft-chr. [−]. H_2SO_4...(f) ←R. NaOH...(1) OR; (2) OR→.	(1) YT2 dis. (yel. sol.). (2) Cotton, (1) RT2 +; (2) ORT1. (3) Wool, (1) OR bril.; (2) OR→ bril.	(1) **DIAZO BRILLIANT SCARLET B EXT. [By].** (2) **DIAZO BRILLIANT SCARLET G EXT. [By].**
397	Aft-chr. [−] (OR Bkn (M)). H_2SO_4...RT1. NaOH...ORT1.	(1) Compl. dis. (½ min.). (2) Cotton, ORT2+. (3) Wool, *ORT1* sl. dull.	**DIAZO BRILLIANT SCARLET 5BL EXT. [By].**
398	Aft-chr. [−]. H_2SO_4...R. NaOH...←OR.	(1) Compl. dis. (1½ min.). (2) Cotton, ORT2. (3) Wool, *OR* bril.	**EMIN RED [A].** Monazo dyestuff: *isodehydrothiometaxylidine* + naphthol(2)-sulphonic ac.(7), (N_2 = 1). — (1891).
399	Aft-chr. [−]. H_2SO_4...←R bril. NaOH...OR→ dull.	(1) Alm. compl. dis. (⅓ min.). (2) Cotton, ←RT1. (3) Wool, OR−.	**COLUMBIA RED 8B [A].** Obsolete. (1896).
400	Aft-chr. [−]. H_2SO_4...VR-R. NaOH...ORT1 dull.	(1) Alm. compl. dis. (½ min.). (2) Cotton, ORT2. (3) Wool, ORT1.	**TITAN SCARLET C [H].** *Dehydrothio-p-toluidinesulphonic ac.* + β-naphthol, (N_2 = 1).— (1889).
401	Aft-chr. [−]. H_2SO_4...R→. NaOH...ROT1+.	(1) Compl. (½ min.). (2) Cotton, RT2. (3) Wool, ORT1.	**DIAMINE FAST SCARLET 4B [C].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Greenish-black powder; e. s. aq. (red); sl. s. alc. (ORT); s. conc. H_2SO_4 (BV). — Ppt. tests: tannin, – ; H_2SO_4, + compl. (RVS1); NaOH, —; Cr, + compl. (VRS2); Cu, + compl. (brown); Ca, + compl. — Dyeing: WCh.	388
Dark brown powder; s. aq. (R and VRT1); sl. s. alc. (RT2); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, – ; Ca, – . — Dyeing: CD. —Allied brand: Diamine Rose BD, which is less concentrated.	389
RS3 powder; e. s. aq. (red); s. alc. (OR); s. conc. H_2SO_4 (RV). — Ppt. tests: tannin, – ; H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, + ; Ca, –. — Dyeing: CD.	390
COLORS ON WOOL.	
Brown-black powder; e. s. aq. (YOS1 and OYT2); alm. i. alc.; s. conc. H_2SO_4 (YOS2). — Ppt. tests: H_2SO_4, + (brown); NaOH, – ; Cr, + ; Cu, + ; Ca, ±. — Dyeing: CD.	391
Dark brown (VR Bkn (D)) powder; e. s. aq. (RO, sl. dull, and ROT2); d. s. alc. (ORT2); s. conc. H_2SO_4 (gray). — Ppt. tests: H_2SO_4, ± (R Bkn (M) on heating); NaOH, – ; Cr, + ; Cu, ± ; Ca, ±. — Dyeing: CDv. w. p-nitraniline.	392
Violet-black powder; s. aq. (R and RT2); s. alc. (←OR); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4 and Cu, + compl. (R–VR, S1); Cr and Ca, + compl. — Dyeing: CD.	393
RS2 powder; e. s. aq. (OR); alm. i. alc. (ROT2); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, – ; Cr, + (OR); Cu, – ; Ca, –. — Dyeing: CD.	394
RS2 powder; e. s. aq. (OR); s. alc. (O); s. conc. H_2SO_4 (VRT1→). — Ppt. tests: H_2SO_4, + (OR, when hot); Cr, + compl.; Cu, ± ; Ca, + compl. — Dyeing: WGS, WCh. — Allied brand: Anthracene Red [I].	395
RS1 powder; e. s. aq. ((1) OR and (2) OR→, ORT2); s. alc. (O); s. conc. H_2SO_4 ((1) R and VRT2→, (2) R–OR, T1). — Ppt. tests: H_2SO_4, + compl.; Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: CDv.	396
Dark brown powder; e. s. aq. (RO–OR, T2); alm. i. alc. (ORT); s. conc. H_2SO_4 (VR–R, T1).—Ppt. tests: H_2SO_4, + (OR); Cr and Cu, + compl.; Ca, ±. — Dyeing: CDv.	397
ORS2 powder; d. s. c. aq. (OT1); s. alc. (O); s. conc. H_2SO_4 (←RT1 bril.). — Ppt. tests: H_2SO_4, – (ROT1), but + compl. w. *hot* sol.; NaOH, + ; Cr, + ; Cu and Ca, ±. — Dyeing: WGS.	398
R–OR, S2 powder; e. s. aq. (R and←RT2); sl. s. alc. (RO); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, + compl.; NaOH, ± ; Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	399
RS2 powder; s. aq. (O dull) w. sl. bluish fluor.; s. alc. (O and ORT2); s. conc. H_2SO_4 (RV–VR). — Ppt. tests: H_2SO_4, + compl. (YOS1); NaOH, + ; Cr, + compl.; $CuSO_4$, + ; Ca, + compl. (if heated). — Dyeing: WGS, WCh. — Allied brands: Clayton Cloth Red, or Stanley Red (ClCo).	400
O Bkn (D) powder; e. s. aq. (OR and ORT2); alm. i. alc.; s. conc. H_2SO_4 (RT1). — Ppt. tests: H_2SO_4, + compl.; NaOH, + ; Cr, + ; Cu, ± ; Ca, + (hot). — Dyeing: CD.	401

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
402	Aft-chr. [−] OR Bkn (M). H_2SO_4...R. NaOH...RO.	(1) Compl. dis. (¾ min). (2) Cotton, ORT1. (3) Wool, ORT1+.	(1) **DIAZO BRILLIANT SCARLET 2BL conc. pat. [By].** (2) **DIAZO BRILLIANT SCARLET PR ext. pat. (By).**
403	Aft-chr. [−]. H_2SO_4...R. NaOH...O–YO, T1.	(1) Compl. dis. (1 min). (2) Cotton, RT2. (3) Wool, ORT1.	**TRONA RED 3B [By].** (Intro. 1899).
404	Aft-chr. [−]. H_2SO_4...O Bkn (L). NaOH...OT2.	(1) Compl. dis., ¼ min. (2) Cotton, RT2. (3) Wool, ORT2→.	**DIAMINE FAST SCARLET 6BS [C].**
405	Aft-chr. [−]. H_2SO_4 ...(f) BG deep. NaOH...RVS2.	(1) Compl. dis. (1 min). (2) Cotton, RT2. (3) Wool, ←OR bril.	**CLOTH SCARLET G [K].** Disazo dyestuff: *aminoazobenzene-p-monosulphonic ac.*+β-naphthol, (N_2, 1). — (1878, '79).
406	Aft-chr. [−](RO–O, T1.) H_2SO_4 ...GBT1+. NaOH...ROT1.	(1) Alm. compl. dis. (2) Cotton, RT1–2. (3) Wool, ORT1–RO.	**DIAMINE RED 4B [C].**
407	Aft-chr. [−](OR–ORS1). H_2SO_4 ...(f) B deep. NaOH...R.	(1) Compl. dis. (1 min). (2) Cotton, RT1. (3) Wool, OR bril.	**BENZO FAST RED GL [By].** (Intro. 1902).
408	Aft-chr. [−] (ORS2). H_2SO_4...(f) B deep. NaOH...ORS2.	(1) Alm. compl. dis. (1½ min). (2) Cotton, RT2. (3) Wool, OR dull.	**COLUMBIA FAST RED F [A].**
409	Aft-chr. [−]. H_2SO_4...(f) B deep. NaOH...OR.	(1) Compl. dis. (2) Cotton, RT2. (3) Wool, OR sl. dull.	**COTTON RED A [C].**
410	Aft-chr. [−] (ROS1). H_2SO_4...(f) B deep. NaOH...ORS1.	(1) Alm. compl. dis. (1 min). (2) Cotton, RT1. (3) Wool, ORT1+ dull.	**BENZO FAST RED FC [By].**
411	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...O.	(1) Compl. dis. (2) Cotton, RVT1. (3) Wool, ORT1.	**BENZO PURPURINE 6B [A].** Disazo dyestuff: *o-tolidine* + 2 mol. 1-aminonaphthalenesulphonic ac. (5), (N_2 = 2). — (1885).
412	Aft-chr. [−] (RO–O, T1 + sl. dull). H_2SO_4...(f) BT1. NaOH...RO→.	(1) Compl. dis. (1 min). (2) Cotton, RT2. (3) Wool, ORT1 dull.	**CONGO [A].** Disazo dyestuff: *benzidine* + 2 mol. naphthionic ac.(N_2 : NH_2 = 2 : 1). — (1884).
413	Aft-chr. [−] (ORS1). H_2SO_4...(f) BV. NaOH...R.	(1) YOT3 dis. (2) Cotton, RT1. (3) Wool, OR sl. dull.	**OXAMINE MAROON [B].** Disazo dyestuff: salicylic ac. (N_2 : OH = 1 : 4) + *benzidine* + 1-amino-naphthol(5)-sulphonic ac.(7), (N_2 : NH_2 = 1 : 6). — (1893).
414	Aft-chr. [−]. H_2SO_4...(f) BV–V. NaOH...R→.	(1) Compl. dis. (1½ min). (2) Cotton, ←RT2+. (3) Wool, OR–RO.	**OXAMINE RED [B].** Disazo dyestuff: salicylic ac. (N_2 : OH = 4 : 1) + *benzidine* + 2-amino-naphthol(5)-sulphonic ac.(7), (N_2 : NH_2 = 6 : 2). — (1893).
415	Aft-chr. [−] ROS1? H_2SO_4...(f) VB. NaOH...ORS2.	(1) Compl. dis. (2) Cotton, RT1 sl. dull. (3) Wool, OR–RO.	**DIRECT FAST RED F Conc. [SS].**
416	Aft-chr [−]. H_2SO_4 ...(f) VS2. NaOH...OR+.	(1) Compl. dis. (⅓ min.). (2) Cotton, RT1. (3) Wool, OR→ bril.	**DIAMINE AZO SCARLET B [C].**
417	Aft-chr. [−] ROS3. H_2SO_4...(f) V bril. NaOH...ORS2.	(1) Good dis. (¾ min). (2) Cotton, R–VR Bkn (M). (3) Wool, OR–RO, S1.	**BENZO BROWN MC [By].**
418	Aft-chr. [−]. H_2SO_4...(f) RV. NaOH...(f) VR Bkn (M).	(1) V. pale yel. dis. (1 min.). (2) Cotton, ORT2. (3) Wool, *OR v. bril.*	(1) **METANIL RED 3B EXT. [By].** (2) **FAST SCARLET P [B].** ((1) Intro. 1902).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
(1) Olive-black, (2) R–VR Bkn (D), powder; e. s. aq. (R and ROT2); alm. i. alc.; s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4, + compl. (O); NaOH, + compl.; Cr, Cu and Ca, all + compl. — Dyeing: CDv.	**402**
RS2 powder; e. s. aq. (sl. turbid R–RO and RT2); v. sl. s. alc. (ROT2); s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr and Ca, + compl.; Cu, –. — Dyeing: CD.	**403**
ORS2 powder; e. s. aq. (R and RT2); v. sl. s. alc. (ROT2); s. conc. H_2SO_4 (R and VRT1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – ; Cu, ±. — Dyeing: CD.	**404**
RS2 powder; s. aq. (←OR and RT2→); s. alc. (ORT1); s. conc. H_2SO_4 (←BG). — Ppt. tests: H_2SO_4, + compl. (hot) (RO–O); NaOH, – (RV→); Cr and Ca, + compl.; Cu, ±. — Dyeing: WGS.	**405**
ORS2 powder: s. aq. (←OR and ORT2); s. alc. (ROT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, + compl. (BV Bkn (D)); NaOH, + ; Cr, + compl.; Cu, + compl. (after long shaking); Ca, + compl. — Dyeing: CD.	**406**
Very dark brown powder; s. aq. (←OR); s. alc. (O); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, + compl. (RS1); NaOH, – ; Cr, + compl.; Cu, + compl. (←ORS2); Ca, + compl. — Dyeing: CD.	**407**
Very dark brown powder; e. s. aq. (←OR–O and OT2); e. s. alc. (OR→ and RT2); s. conc. H_2SO_4 (VBS1, bril.). — Ppt. tests: H_2SO_4, + compl. (R); NaOH, + compl.; Cr, Cu and Ca, all + compl. — Dyeing: CD.	**408**
←ORS1 powder; e. s. aq. (←OR and ROT2); s. alc. (←O); s. conc. H_2SO_4 (←VB). — Ppt. tests: H_2SO_4, + compl. (VBS2); NaOH, – ; Cr, + compl. (O Bkn (D)); Cu, – (R bril.); Ca, –. — Dyeing: CD.	**409**
RS2 powder; s. aq. (R→ and ROT2); s. alc. (RT2); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, + compl. (R); NaOH, + compl.; Cr, Cu and Ca, all + compl. — Dyeing: CD.	**410**
Red powder; s. aq. (turbid red); e. s. in hot aq.; s. alc. (red); s. conc. H_2SO_4 (B). — Ppt. tests: tannin, – ; H_2SO_4, + compl. (dark B); NaOH, + ; Cr, + compl.; Cu, – (RS2); Ca, + compl. — Dyeing: CD.	**411**
ORS2 powder; s. aq. (R→ and ←ROT2); s. alc. (O–RO); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, + compl. (VBS2); NaOH, – ; Cr, + compl. (dark brown); Cu, – ; Ca, –. — Dyeing: WN, CD; alkalimetric indicator. — Allied brands: Congo, [By] [L] [S] [O] [Lev] [t.M]; Congo Red R [H]; Direct Red C [PL]; Congo Red.	**412**
Black powder; s. aq. (RT1 dull and RT2 dull); s. alc. (R–VR); s. conc. H_2SO_4 (BVS1→ bril.). — Ppt. tests: H_2SO_4, + compl.; NaOH, + ; Cr, Cu and Ca, all + compl. — Dyeing: CD.	**413**
Brown-black powder; s. aq. (R, OR and ORT2); s. alc. (←O); s. conc. H_2SO_4 (BVS1→). — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, Cu and Ca, all + compl. — Dyeing: CD.	**414**
RS2 powder; e. s. aq. (OR, RO and ROT2, sl. turbid); s. alc. (RT1→); s. conc. H_2SO_4 (VB→). — Ppt. tests: H_2SO_4, NaOH, Cr and Ca, all + compl. — Dyeing: CD.	**415**
RS2→ powder; s. aq. (OR and ORT2); s. alc. (O); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, ± ; Ca, ±. — Dyeing: CD.	**416**
Very dark gray powder; s. aq. (RS1→ dull and ROT2 dull); s. alc. (R→); s. conc. H_2SO_4 (←V). — Ppt. tests: H_2SO_4, + compl. (←RS1); NaOH, – ; Cr, + compl. (brown); Cu and Ca, + compl. — Dyeing: CD.	**417**
ORS2 powder; s. aq. (OR, RO–O and ORT2); s. alc. (←O); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, + compl. (RS2); Cr and Ca, + compl.; Cu, –. — Dyeing: WGS. — Allied brands: Metanil Red 3B [By].	**418**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
419	Aft-chr. [−]. H_2SO_4...(f) RV→. NaOH...R–OR, S1.	(1) Pale T yel. dis. (1 min.). (2) Cotton, RT1–2. (3) Wool, ←OR.	**CLAYTON CLOTH RED [ClCo].** Azo dyestuff: *dehydrothio-p-toluidine-sulphonic ac.* + β-naphthol, (N_2 = 1). — (1889).
420	Aft-chr. [−] RO–O, T1→ [sl. dull. H_2SO_4...RV, dark. NaOH...ORS1.	(1) Good dis. (½ min.). (2) Cotton, R–VR, T2. (3) Wool, ORT1 dull.	**CHROME FAST RED R [A].** (Intro. 1902).
421	Aft.-chr. [−]. H_2SO_4...(f) RVS1. NaOH...OR→.	(1) Compl. dis. (¾ min.). (2) Cotton, RT1. (3) Wool, OR bril.	**DIAMINE AZO SCARLET A [C].**
422	Aft-chr. [−]. H_2SO_4...(f) RV→. NaOH...ROS2.	(1) V. pale yel. dis. (1¼ min). (2) Cotton, ORT2. (3) Wool, OR bril.	**CHROME FAST RED G [A].** (Intro. 1902).
423	Aft-chr. [−]. H_2SO_4...(f) C. gray (D). NaOH...ROS1.	(1) YOT2 ⅓ dis. (2) Cotton, ORT1 dull. (3) Wool, OR Bkn (M).	**HESSIAN BROWN MM [L].** Tetrakisazo dyestuff: 2 mol. (*sulphanilic ac.* + resorcine) + *o-tolidine.*— (1889).
424	Aft-chr. [−] OR Bkn (L). H_2SO_4...C. gray (L). NaOH...YOT2.	(1) Compl. dis. (15 sec.). (2) Cotton, ←RT2. (3) Wool, ORT2.	**BENZO FAST SCARLET 8BA pat. [By].**
			SECTION OF RED-ORANGE
425	Aft-chr. [+] (YO Bkn [(v.D)). H_2SO_4...(f) W. gray. NaOH...ORS1.	(1) Compl. dis. (2) Cotton, ROT2→ sl. dull. (3) Wool, ROS1→.	**ANTHRACENE CHROMATE BROWN EB [C].**
426	Aft-chr. [−]. H_2SO_4...←RS1. NaOH...R→.	(1) Compl. dis. (1½ min.). (2) Cotton, ORT2−. (3) Wool, RO bril.	**MERCERINE WOOL SCARLET 5B [H].**
427	Aft-chr. [−]. H_2SO_4...←R. NaOH...OR→.	(1) Compl. dis. (¾ min.). (2) Cotton, RT2. (3) Wool, ←RO bril.	**ROSANTHRENE R [I].**
428	Aft-chr. [−]. H_2SO_4...←R. NaOH...ROS1.	(1) Compl. dis. (1 min.). (2) Cotton, ORT1. (3) Wool, ROT1+.	**BENZO FAST SCARLET GS [BY].** (Intro. 1900).
429	Aft-chr. [−]. H_2SO_4...R→. NaOH...RO→.	(1) Compl. dis. (1 min.). (2) Cotton, ORT2. (3) Wool, RO.	**TRONA RED GG [By].**
430	Aft-chr. [−]. H_2SO_4...RT1→. NaOH...←OT1.	(1) Compl. dis. (⅓ min.). (2) Cotton, RT2. (3) Wool, ROT1+.	**DIAMINE FAST SCARLET 4BN [C].**
431	Aft-chr. [−]. H_2SO_4...ORT1. NaOH...←OT1.	(1) Compl. dis. (1 min.). (2) Cotton, ORT2. (3) Wool, ROT1.	(1) **DIAMINE FAST SCARLET GB [C].** (2) **DIAMINE FAST SCARLET GG [C].**
433	Aft-chr. [−]. H_2SO_4...(f) VBS2. NaOH...(f) ORS2.	(1) YOT2 dis. (2) Cotton, R Bkn (M). (3) Wool, ←ROS2.	**CHROMANILE BROWN R [A].**
434	Aft-chr. [−]. H_2SO_4...(f) VBS1. NaOH...RO–O, S1.	(1) YOT3 dis. (2) Cotton, R Bkn (M). (3) Wool, ROS1→.	**OXAMINE BROWN GR [B].**
435	Aft-chr. [−] (YO–O, S2). H_2SO_4...(f) VS1. NaOH...ORS2.	(1) Compl. dis. (70 sec.). (2) Cotton (Bkn rose.) (3) Wool, ROS2 (brown).	**DIAMINE BROWN M [C].** Disazo dyestuff: salicylic ac. (N_2 : OH = 1 : 4) + *benzidine* + 2-amino-naphthol(8)-sulphonic ac.(6), (N_2 = 7). — (1889).
437	Aft-chr. [−]. H_2SO_4...(f) VS1. NaOH...OS1→.	(1) Compl. d. (70 sec.). (2) Cotton, R s2. (3) Wool R OT	**DIAMINE SCARLET B [C].** Disazo dyestuff: naphthol(2)-disulphonic ac.(6, 8), (N_2 = 1) + *benzidine* + ethyoxylbenzene (N_2 : OEt = 1 : 4). — (1889).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Red powder; s. aq. (turbid red-orange); e. s. alc. (orange-red); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, NaOH and Cr, all +; Cu and Ca –. — Dyeing: WGS. — Allied brand: Stanley Red [ClCo].	**419**
Dark brown powder; e. s. aq. (R→, OR→ and ORT2); s. alc. (OR→); s. conc. H_2SO_4 (RV→). — Ppt. tests: H_2SO_4, + compl. (VRS2); Cr, + compl. (R–VR); Cu, – (RV→); Ca, –. — Dyeing: WGSCh. — Allied brands: Chrome Fast Red B and G [A].	**420**
ORS2 powder; e. s. aq. (OR – RO and RT2); s. alc. (O and ROT2); s. conc. H_2SO_4 (RV→). — Ppt. tests: H_2SO_4, + compl. (RT1); Cr, + compl. (R); Cu, + compl.; Ca, +. — Dyeing: CD.	**421**
RS2 powder; e. s. aq. (OR–RO); sl. s. alc. (ROT2); s. conc. H_2SO_4 (VR–RV). — Ppt. tests: H_2SO_4, + compl. (O Bkn (D)); Cr, + compl.; Cu, ±; Ca, –. — Dyeing: WGSCh.	**422**
Olive-black powder; e. s. aq. (←OS1 and YOT2); s. alc. (R–OR); s. conc. H_2SO_4 (RVS1). — Ppt. tests: H_2SO_4, + compl.; Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	**423**
VR Bkn (D) powder; e. s. aq. (R and ←RT2); alm. i. alc.; s. conc. H_2SO_4 (VB–BV). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**424**
COLORS ON WOOL.	
Black powder; s. aq. (turbid OS2, ←YOS1–YO and YOT2→); s. alc. (O→); s. conc. H_2SO_4 (YO–Y Bkn (D)). — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, – ; Cr, +; Cu, –; Ca, –. — Dyeing: One bath W.Ch.	**425**
ORS2 powder; s. aq. (RO and ROT2); s. alc. (O); s. conc. H_2SO_4 (VR v. bril.). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**426**
←OR powder; e. s. aq. (OR and ORT2); s. alc. (O); s. conc. H_2SO_4 (R–VR, T1). — Ppt. tests: H_2SO_4, + compl.; NaOH, + ; Cr, + compl.; Cu, + compl.; Ca, +. — Dyeing: CDv. (Test 20: wool OR bril.; Cot. RT3).	**427**
ORS2 powder; e. s. aq. (OR and ROT2); sl. s. alc. (OT2 +); s. conc. H_2SO_4 (VR–VRT1 v. bril.). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**428**
ORS1 powder; s. aq. (OR and ROT2, turbid); s. alc. (O–YO); s. conc. H_2SO_4 (←OR). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (O–RO); Cr, + compl.; Cu, –; Ca, + compl.—Dyeing: CD.	**429**
ORS2 powder; e. s. aq. (R and ORT2); sl. s. alc. (OT1 +); s. conc. H_2SO_4 (RT1 bril.). — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, ±; Ca, +. — Dyeing: CD.	**430**
←ROS2 powder; e. s. aq. (OR and ROT2); s. alc. (O –); s. conc. H_2SO_4 (1)(RO bril.); (2)(←ORT1 bril.). — Ppt. tests: H_2SO_4, + compl.; Cr, +; NaOH, Cu and Ca, all –. — Dyeing: CD.	**431**
Black powder; e. s. aq. (ROS2, OS1 and YO Bkn (L)); v. sl. s. alc. (YO Bkn (L)); s. conc. H_2SO_4 (BS1). — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, –; Cr, Cu and Ca, all + compl. — Dyeing: CD w. aft. Cr, Cu treatment.	**433**
Dark gray powder; e. s. aq. (ORS2, OS1→ and YO Bkn (L)); s. alc. (RO); s. conc. H_2SO_4 (BS1). — Ppt. tests: tannin, –; H_2SO_4, + compl. (VRS2); Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**434**
Black powder; e. s. aq. (ORS2 and OR Bkn (L)); e. s. al (OR–ORS1, OS1 and OR Bkn (L)); s. conc. H_2SO_4 (BV). — Ppt. tests: NaOH, —; H_2SO_4, + compl. (VRS2→); Cr, Cu and Ca, all + compl. — Dyeing: CD w. aft. Cr, Cu treatment.	**435**
OR–R powder; e. s. aq. (OR, RO, and ROT2, turbid); s. alc. (O); s. conc. H_2SO_4 (V bril.). — Ppt. tests: tannin, –; H_2SO_4, +; NaOH, + (v. fine cryst.); Cr, + compl.; Cu, –; Ca, ±. — Dyeing: CD, WG.	**437**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF ORANGE
438	H_2SO_4...(f) ←VR. NaOH...RO dull.	(1) Compl. dis. (2) Cotton, YOT1. (3) Wool, O–OS1→.	**DIANIL BROWN 3GO [M].** (Intro. 1898).
439	H_2SO_4...(f) VR Bkn (D). NaOH...OS1.	(1) OYT1 dis. (2) Cotton, RO Bkn (M). (3) Wool, OS1.	**DIAMINE NITRAZOL BROWN RD [Math].** Disazo dyestuff of benzidine series with a metadiamine second component.
439^1	H_2SO_4...(f) VR sl. dull. NaOH...O.	(1) OYT3 dis. (2) Cotton, OT1 sl. dull. (3) Wool, O–YO.	**NAPHTHAMINE BROWN GX [K].**
440	H_2SO_4...(f) VRT2 dull. NaOH...O dull.	(1) Compl. dis. (½ min.). (2) Cotton, ROT2. (3) Wool, OT1+ sl. dull.	**TERRA COTTA FS [G].** ["Terra Cotta F (G)," (disc. 1890), is the disazo dyestuff: *primuline* +1, 4-naphthylaminesulphonic ac.-azo-m-phenylenediamine.]
441	H_2SO_4...R. NaOH...RS1.	(1) Alm. compl. dis. (1½ min.). (2) Cotton, ORT1 sl. dull. (3) Wool, OS1+.	**DIAZO RUBINE B [By].** (Intro. 1902).
442	H_2SO_4...R. NaOH...O sl. dull.	(1) Compl. dis. (1 min.). (2) Cotton, ORT2. (3) Wool, ←O.	**ROSANTHRENE VIOLET (I).**
443	H_2SO_4...R. NaOH...O dull.	(1) Compl. dis. (75 sec.). (2) Cotton, ROT1. (3) Wool, O→.	**DIAMINE AZO BORDEAUX B [C].**
444	H_2SO_4...R. NaOH...OS1.	(1) Compl. dis. (1½ min.). (2) Cotton, OT1. (3) Wool, O.	**ROSANTHRENE ROSE [I].**
445	H_2SO_4...RT1+. NaOH...OS1.	(1) Compl. dis. (50 sec.). (2) Cotton, OT1. (3) Wool, *O* bril.	**BENZO FAST ORANGE S [By].** (Intro. 1900).
446	H_2SO_4...(f) ←R–RS1. NaOH...OS1.	(1) OYT3–2 dis. (2) Cotton, YOT1. (3) Wool, O.	**DIPHENYL ORANGE RR [G].** Sodium salt of 4-nitrosostilbenedisulphonic ac.(2,2′)-azo-aniline, (N_2 : NH_2 = 1 : 4). — (1899).
447	H_2SO_4...ORS2→. NaOH...RO dull.	(1) YT2 dis. (1 min.). (2) Cotton, O–YO, T1 dull. (3) Wool, O–OS1.	(1) **THIAZINE BROWN G [B].** (2) **THIAZINE BROWN R [B].** Azo derivative of primuline homologues (?). — (Intro. 1894).
448	H_2SO_4...OR. NaOH...RO.	(1) Compl. dis. (⅔ min.). (2) Cotton, O–RO, T1. (3) Wool, O bril.	**ROSANTHRENE O [I].**
449	H_2SO_4...OR. NaOH...←O sl. dull.	(1) YT2+ dis. (2) Cotton, OT2. (3) Wool, O.	**DIAZO BRILLIANT ORANGE G pat. [By].**
450	H_2SO_4...ORT1. NaOH...OT2.	(1) Compl. dis. (10 sec.). (2) Cotton, ROT2+. (3) Wool, OT1.	**DIAMINE FAST SCARLET GG [C].**
451	H_2SO_4...OS2. NaOH...O–YO, S2.	(1) OYT2 dis. (2) Cotton, YO–OY. (3) Wool, O–YO, S1+.	**RESORCIN BROWN [A].** Disazo dyestuff: *sulphanilic ac.* + resorcinol, (N_2 : N_2 : $(OH)_2$ = 1 : 3 : 4 : 6) + *m-xylidine.* — (1881).

Appearance (T.2). Solutions (T.3). After-chroming (T.16). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
RS3 powder; e. s. aq. (turbid ORS2, OS1, YO and OYT2); v. sl. s. alc. (OYT1); s. conc. H_2SO_4 (RV). — After-chrome test: [–]. — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, Cr, Cu and Ca, all +. — Dyeing: CD, CDv. (Test 20, –).	438
RS3 powder; e. s. aq. (ROS2, OS1 and YOT2 dull); s. alc. (OS1→and YOT2); s. conc. H_2SO_4 (RVS1).—After-chrome test: [–]. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: CD, CDv. w. diazotized p-nitraniline.	439
O Bkn (M) powder; e. s. aq. (turbid ORS1, YO and OYT2); sl. s. alc. (OYT1); s. conc. H_2SO_4 (RV). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, +; Cu, +; Ca, –. — Dyeing: CD.	439¹
Black powder; e. s. aq. (ORS2, OS1 and O Bkn (L)); e. s. alc. (OS1, YO, and YOT2); s. conc. H_2SO_4 (VRT1). —After-chrome test: [–]. — Ppt. tests: H_2SO_4, + alm. compl.; Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	440
ROS2 powder; e. s. aq. (OR, O and YOT2); v. sl. s. alc. (YOT2); s. conc. H_2SO_4 (ORT1). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4 and Cr, + compl.; Cu, +; NaOH and Ca, –. — Dyeing: CDv. (Test 20: RS1 on wool; ←VRT1 on cotton).	441
OR Bkn (L) powder; e. s. aq. (RO, O and OT2); i. alc.; s. conc. H_2SO_4 (←RT1). — After-chrome test: [–]. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, ±; Cu, –; Ca, –. — Dyeing: CDv. (Test 20: wool, ←R; Cot., VRT2 –).	442
ROS2 powder; e. s. aq. (sl. turbid OR, O, YO and YOT2); sl. s. alc. (YO); s. conc. H_2SO_4 (RT1 +). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	443
ROS2 powder; e. s. aq. (OR, YO and YOT2); sl. s. alc. (YO); s. conc. H_2SO_4 (RT1 +). — After-chrome test: color deepened. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu and Ca, –. — Dyeing: CDv. (Test 20: wool R sl. dull; Cot. VRT1→ sl. dull).	444
ORS1 powder; e. s. aq. (RO, O and OT2); s. alc. (YO); s. conc. H_2SO_4 (RO bril.). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, + compl.; Cr, + compl.; Cu, –; Ca, ±. — Dyeing: CD, WGS.	445
OR Bkn (D) powder; e. s. aq. (turbid RO, O, YO, OY and OY-Y, T2); sl. s. alc. (Y-OY, T1); s. conc. H_2SO_4 (←R). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl. (violet-black); NaOH, –; Cr, + compl.; Cu, +; Ca, –. — Dyeing: CD; CDv. w. β – naphthol for bordeaux. (Test 20: wool, RS1; cot. ORT2).	446
R Bkn (D) powder; e. s. aq. (ORS2, YO and OYT2); sl. s. alc. (OYT1); s. conc. H_2SO_4 ((1) RO-O +, (2) OR). — Ppt. tests: H_2SO_4, ±; NaOH, –; Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	447
OR-ORS1 powder; e. s. aq. (O and OT2); s. alc. (YO); s. conc. H_2SO_4 (ORT1→). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu, +; Ca, –. — Dyeing: CDv. w. β-naphthol. (Test 20: wool unchanged).	448
ROS2 powder; s. aq. (OS1, O and OT2); s. alc. (OY); s. conc. H_2SO_4 (ORT1→). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, +; Cu, +; Ca, –. — Dyeing: CDv. (Test 20: wool unchanged).	449
ROS2 powder; e. s. aq. (OR, RO and ROT2); v. sl. s. alc. (OT2+); s. conc. H_2SO_4 (OR-RO). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	450
RS3 powder; e. s. aq. (ORS2, OY and Y-OY, T2); e. s. alc. (OR→); s. conc. H_2SO_4 (ROS1). — After-chrome test: unchanged — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr +. — Dyeing: WGS, leather. — Allied brand: Resorcine Brown [H].	451

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
452	H_2SO_4...(f) YOS2. NaOH...O–O, S1.	(1) YOT2− dis. (2) Cotton, ROS1. (3) Wool, OS1.	**BRUN N [P].**
453	H_2SO_4...(f) YO Bkn (D). NaOH...O–YO, S2.	(1) YO–OY, T2− dis. (2) Cotton, O–YO Bkn (M).	**BISMARCK BROWN YS [C].**
454	H_2SO_4...YOS2. NaOH...YOS1.	(1) Alm. compl. dis. (1 min.). (2) Cotton, OS1. (3) Wool, OS1.	(1) **BISMARCK BROWN Y [B].** (2) **BISMARCK BROWN R EXT. [By].**
455	H_2SO_4...YO Bkn (M). NaOH...←OY dull.	(1) Compl. dis. (1 min.). (2) Cotton, O Bkn (M). (3) Wool, O Bkn (M).	**DIRECT DARK BROWN G for Leather [A].**
456	H_2SO_4...OY sl. dull. NaOH...RO.	(1) YOT2+ dis. (2) Cotton, YO. (3) Wool, O→.	**PYRAMINE ORANGE R [B].** *Benzidine-2,2′-disulphonic ac.* + 2 mol. 1,3-diamino-4-nitrobenzene, (N_2 = 6). — (Intro. 1895).
457	H_2SO_4...Y Bkn (L). NaOH...YOT3.	(1) Compl. dis. (1 min.). (2) Cotton, ←OT2. (3) Wool, OT2−, sl. dull.	**MIKADO BROWN B [L].** Reaction product of alkali on p-nitrotoluenesulphonic ac. etc. — (1888).
458	H_2SO_4...YG Bkn (D). NaOH...OY Bkn (D).	(1) Alm. compl. dis. (2) Cotton, R Bkn (L). (3) Wool, O Bkn (D).	**JANUS BROWN B [M].** Disazo dyestuff: [Ger. pat. 93499 or 99127 (?)].
459	H_2SO_4...(f) BGS2. NaOH...(f) VRS1.	(1) Compl. dis. (½ min.). (2) Cotton, OT1→ dull. (3) Wool, OS1+.	**SALICINE BROWN RC [K].**
460	H_2SO_4...BGS2. NaOH...RS1.	(1) Compl. dis. (30 sec.). (2) Cotton, OT1 dull. (3) Wool, O→ dull.	**ANTHRACENE ACID BROWN R pat. [C].** Primary disazo dyestuff: (from salicylic ac.) — (Intro. 1896).
461	H_2SO_4...(f) BT1 sl. dull. NaOH...RO.	(1) YOT3 dis. (2) Cotton, RT2. (3) Wool, O.	**CONGO 4R [A].** Disazo dyestuff: Naphthionic ac., ($NH_2 : N_2 = 1 : 2$) + *o-tolidine* + ($N_2 : OH : OH = 1 : 2 : 4$) resorcine. — (1886).
462	H_2SO_4...(f) BVS2. NaOH...(f) ORS2.	(1) ←YT3 dis. (2) Cotton, OT1 Bkn. (3) Wool, OS1.	**DIAMINERAL BROWN G [C].** (Intro. 1901).
463	H_2SO_4...(f) BVS1. NaOH...(f) ROS2.	(1) OYT3 dis. (1½ min.). (2) Cotton, ORT2 dull. (3) Wool, OS1–2.	**BENZO CHROME BROWN R [By].**
464	H_2SO_4...(f) BVS1. NaOH...ROS2.	(1) Compl. dis. (1¾ min.). (2) Cotton, OS1. (3) Wool, O.	**DIANIL CHROME BROWN G [M].**
465	H_2SO_4...BVT2 (v. dull) NaOH...OT1.	(1) Alm. compl. dis. (2) Cotton, RT2. (3) Wool, OT1.	**COLUMBIA FAST SCARLET 4B [A].** (Intro. 1900).
465^1	H_2SO_4...BVS1→. NaOH...OT1+.	(1) Compl. dis.; air ret (YOT2). (2) Cotton, R–VR Bkn (M). (3) Wool, O Bkn (M); OS1–2.	**DIAZETHYL BLACK R [By].** (Intro. 1900).
466	H_2SO_4...(f) ←VS1. NaOH...R.	(1) Compl. dis. (1 min.). (2) Cotton, R Bkn (M). (3) Wool, OS1.	**DIANIL CHROME BROWN R [M].**

Appearance (T.2). Solutions (T.3). After-chroming (T.16). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Greenish-black powder; e. s. aq. (ORS2, YO and OYT2); e. s. alc. (R→); s. conc. H_2SO_4 (YO→). — After-chrome test: YO Bkn (M). — Ppt. tests: H_2SO_4, Cu, Cr and Ca, all – ; NaOH, +. — Dyeing: WGS.	**452**
Black powder; e. s. aq. (R–RS2, YO and YOT2); e. s. alc. (R–ORS1, YO and OYT2); s. conc. H_2SO_4 (YOS1). — After-chrome test: YOS2. — Ppt. tests: H_2SO_4, + ; NaOH, + ; Cr, Cu and Ca, –. — Dyeing: CT.	**453**
(1) Black, (2) reddish-black powder; e. s. aq. (OR, YO and OYT2); e. s. alc. (OR); s. conc. H_2SO_4 (OYS1). — After-chrome test: YO Bkn (M). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: CT.	**454**
Brownish-black powder; e. s. aq. (ORS2, OS1 and YOT2); e. s. alc. (ROS2, OS1 and YOT2); s. conc. H_2SO_4 (OYS1). — After-chrome test: OY Bkn (M). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –.	**455**
ORS1 powder; e. s. aq. (RO, YO and OYT2); s. alc. (OY); s. conc. H_2SO_4 (Y). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all + compl. — Dyeing: CD.	**456**
RS3 powder; e. s. aq. (ORS2, OY and OYT2); i. alc.; s. conc. H_2SO_4 (BV→). — After-chrome test: OYT2 –: — Ppt. tests: H_2SO_4, – (YOS2); NaOH, – ; Cr, + ; Cu and Ca, –. — Dyeing: CD. — Allied brands: Mikado Brown 3GO and M [L].	**457**
Black powder w. metallic lustre; d. s. c. aq.; e. s. hot aq. (R Bkn (D) and O–YO Bkn (L)); e. s. alc. (RS2 Bkn and R Bkn (L)); s. conc. H_2SO_4 (BG–G, S1). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + ; NaOH, Cr, Cu and Ca, all –. — Dyeing: CT.	**458**
Brownish-black powder; s. aq. (turbid ORS1, OY and OYT1); e. s. alc. (ROS1 +, OY and OYT2); s. conc. H_2SO_4 (←BGS1). — After-chrome test: OS2→. — Ppt. tests: H_2SO_4, + compl.; NaOH, – (VRS1); Cr, + alm. compl.; Cu, + compl.; Ca, +, — Dyeing: WGSCh.	**459**
Brownish-black powder; e. s. aq. (ORS3, OS1 and YOT2 dull); s. alc. (O); s. conc. H_2SO_4 (←BGS1). — After-chrome test: YOS1. — Ppt. tests: H_2SO_4, + compl.; NaOH, – (R); Cr, Cu and Ca, +. — Dyeing: WCh.	**460**
Red-black powder; e. s. aq. (RS2–YOT2); e. s. alc. (RO+ and YOT2); s. conc. H_2SO_4 (VB). — — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, – (R); Cr, + compl.; Cu and Ca, –. — Dyeing: CD. –. — Allied brands: Congo 4R (By) (L).	**461**
R Bkn (D) powder; e. s. aq. (ORS2→, YO and OYT2); s. alc. (YO); s. conc. H_2SO_4 (GBS1). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, + compl.; Ca, ±. — Dyeing: CD; or aft. Cu, Cr treatment.	**462**
Brownish-black powder; e. s. aq. (ORS2, OS1 and YO Bkn (L)); v. sl. s. alc. (OT2 dull); s. conc. H_2SO_4 (B–VB). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, + ; Ca, –. — Dyeing: CD.	**463**
R Bkn (D) powder; e. s. aq. (turbid ORS2, YO and OYT2); s. alc. (YO); s. conc. H_2SO_4 (GBS1). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, + comp.; Ca, –. — Dyeing: CD.	**464**
ORS1 + powder; e. s. aq. (OR, RO and ROT2); sl. s. alc. (←ROT1); s. conc. H_2SO_4 (GB). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, – ; NaOH, + ; Cr, + compl.; Cu, – ; Ca, + compl. — Dyeing: CD, WA.	**465**
Brownish-black powder; e. s. aq. (RS1 and OR Bkn (L)); s. alc. (←OR); s. conc. H_2SO_4 (VB).— Aft.-chr. test: O Bkn (D). — Ppt. tests: H_2SO_4, + compl. (VS2); NaOH and Ca, – ; Cr, + compl. (violet-black); Cu, – (red black).— Dyeing: CDv. w. β-naphthol for black. (Test 20: wool, black; cot. BV Bkn (D)).	**465**^{1}
Dark brown powder; e. s. aq. (RS3, YOS1 and YOT2 dull); i. alc.; s. conc. H_2SO_4 (←VB). After-chrome tests: alm. unchanged. — Ppt. tests: H_2SO_4, + ; NaOH, – ; Cr, + alm. compl.; Cu, + ; Ca, –. — Dyeing: CD.	**466**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
467	H_2SO_4...(f) V→. NaOH...ORS1.	(1) Compl. dis. (90 sec.). (2) Cotton, R Bkn (M). (3) Wool, OS2.	**CUTCH BROWN R conc. [SS].**
468	H_2SO_4 (f) ←VS1. NaOH...(f) ROS2.	(1) Compl. dis. (75 sec.). (2) Cotton, O Bkn (L). (3) Wool, O–OS1.	**BENZO CHROME BROWN G [By].** (Intro. 1896.)
469	H_2SO_4...(f) ←VS2. NaOH...O→.	(1) Compl. dis. (1 min.). (2) Cotton, OYT2+. (3) Wool, O→ bril.	**ORANGE BG [B].**
470	H_2SO_4...RVS1. NaOH...RT1.	(1) Alm. compl. dis. (2) Cotton, VRT1 (3) Wool, O.	**AZO CORINTH [O].** Trisazo dyestuff: 1-aminophenol(4)-sulphonic ac.(5), ($N_2 = 6$) + *tolidine* + resorcinol, ($N_2 : N_2 : (OH_2) = 1 : 5 : 2 : 4$) + *naphthionic ac.*—(1892).
471	H_2SO_4...(f) RV Bkn. (D). NaOH...ORS1+.	(1) OT2– dis. (2) Cotton, ROT1. (3) Wool, O–RO, S1.	**DIAMINE FAST BROWN R [C].**
472	H_2SO_4...(f) ←RVS1. NaOH...ROS2.	(1) Compl. dis. (1½ min.). (2) Cotton, OT1+ dull. (3) Wool, O–YO sl. dull.	**DIANIL BROWN G [M].**
473	H_2SO_4...(f) RVS1. NaOH...RO.	(1) Alm. compl. dis. (1 min.). (2) Cotton, O–OY, T1 sl. dull. (3) Wool, O→.	**OXAMINE BROWN 3G [B].**
474	H_2SO_4...(f) RVS1. NaOH...ROS2.	(1) Compl. dis. (¾ min.). (2) Cotton, W. gray (M). (3) Wool, O–YO Bkn (M).	**BENZO CHROME BROWN B [By].** (Intro. 1896).
476	H_2SO_4...(f) W. or N. gray (D). NaOH...RO.	(1) Compl. dis. (1¼ min.). (2) Cotton, OT1. (3) Wool, O dull.	**DIAMINE FAST BROWN G [C].**
477	H_2SO_4...W. gray (D). NaOH...YO.	(1) OYT2 dis. (2) Cotton, RO Bkn (M). (3) Wool, OS1→.	**CHLORAZOL BROWN R [H].**
478	H_2SO_4...W. gray. NaOH...OT4 dull.	(1) Compl. dis. (½ min.). (2) Cotton, B–BV Bkn (L–M). (3) Wool, OT3–2 Bkn, or O Bkn (v.L).	**COLUMBIA BLACK B [A].** Trisazo dyestuff: m-tolylenediamine, ($N_2 : CH_3 = 4 : 6$) + *dianisidine* + ($N_2 : OH = 7 : 8$), *2-aminonaphthol (8)-disulphonic ac.*(3,6). + m-tolylenediamine, ($N_2 : CH_3 = 4 : 6$). —(1893).
479	H_2SO_4...C. gray (v.D). NaOH...VR Bkn (D).	(1) Compl. dis.; air ret. pale reddish. (2) Cotton, R Bkn (M). (3) Wool, OS1– O Bkn (M).	**ANTHRACENE ACID BROWN N [C].**
480	H_2SO_4...(f) V–N gray (D). NaOH...RO sl. dull.	(1) Compl. dis. (1¾ min.). (2) Cotton, OT1. (3) Wool, O–.	**CHLORANTINE BROWN R [I].** (" Resembles Mikado Brown.") (Intro. 1899).
481	H_2SO_4...V–N gray (D). NaOH...YOS2.	(1) Compl. dis. (2) Cotton, O Bkn (M). (3) Wool, O–YO, S1.	**JANUS BROWN R [M].** Disazo dyestuff: [Ger. pat. 93499 or 99127 (?)].

Appearance (T.2). Solutions (T.3). After-chroming (T.16). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
V. dark brown powder; e. s. aq. (turbid RS2 and R Bkn (L)); s. alc. (R→); s. conc. H_2SO_4 (BVS1 bril.). — After-chrome test: YOS1. —Ppt. tests: H_2SO_4, + compl.; NaOH, +; Cr, + compl.; Cu, + compl.; Ca, + alm. compl.	**467**
Reddish-black powder; e. s. aq. (RS2, OY and OYT2→); sl. s. alc. (OY); s. conc. H_2SO_4 (VBS1). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, +; Cu, + alm. compl.; Ca, –. — Dyeing: CD; aftertreated w. Cr, Cu.	**468**
YO powder; e. s. aq. (O→, Y and YT2); s. alc. (YO→); s. conc. H_2SO_4 (BV–V, S1). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + (VR–black); NaOH, + (OY, cryst.); Cr, + (cryst.); Cu, + (cryst.); Ca, + (cryst.). — Dyeing: WGS.	**469**
Dark brown powder; e. s. aq. (RS3, R Bkn (M) and ORT2 sl. dull); sl. s. alc. (YOT1); s. conc. H_2SO_4 (BV). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, – Cr, + compl.; Cu and Ca –. — Dyeing: CD; used as a component of mode colors.	**470**
OR Bkn (D) powder; e. s. aq. (ORS2, YO and YOT2); alm. i. alc. (OYT3); s. conc. H_2SO_4 (BV Bkn (D)).— After-chrome test: alm. unchanged.— Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + compl.; Cu and Ca –. — Dyeing: CD.	**471**
R Bkn (v.D) powder; e. s. aq. (RS2→, YO and OYT2); s. alc. (YO); s. conc. H_2SO_4 (BGS1). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + alm. compl.; Cu, +; Ca, ±. — Dyeing: CD or CDv. (Test 20: Wool alm. unchanged after washing).	**472**
YO Bkn (D) powder; e. s. aq. (ORS2, OY and OYT2); alm. i. alc. (OYT3); s. conc. H_2SO_4 (V–RV). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, –; Cr, + compl.; Cu and Ca, +. — Dyeing: CD.	**473**
Black powder; e. s. aq. (R Bkn (v.D.) — black and R Bkn (L)); sl. s. alc. (VR Bkn (M)); s. conc. H_2SO_4 (GB→). — After-chrome test: YOS1 sl. Bkn. — Ppt. tests: H_2SO_4, + compl. (G. gray (D); NaOH, (RS3); Cr, + compl.; Cu, + compl.; Ca, –. — Dyeing: CD, after treatment w. Cr and Cu.	**474**
OR Bkn (D) powder; e. s. aq. (R–OR, YO and YOT2); sl. s. alc. (OYT1); s. conc. H_2SO_4 (blue-black). — After-chrome test: alm. unchanged.— Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**476**
Reddish-black powder; e. s. aq. (turbid ORS2, OS1 and YO Bkn (L)); s. alc. (YO–O); s. conc. H_2SO_4 (RV–VR, S1). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + (OR Bkn (D); NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: CD.	**477**
Black powder; s. aq. (turbid violet-black (V Bkn (D +) and V Bkn (M)); i. alc.; s. conc. H_2SO_4 (B Bkn (L)). — After-chrome test: OYT2 –. — Ppt. tests: H_2SO_4, (BVS3); NaOH, – (VRS2); Cr, + compl.; Cu, + compl.; Ca, –. — Dyeing: CD.	**478**
Black powder; s. aq. (turbid ORS3, OS1 and ←OYT2 dull); e. s. alc. (OR–ORS1); s. conc. H_2SO_4 (green gray (D)). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, + compl.; Ca, +. — Dyeing: WGS, WCh, SA.	**479**
O Bkn (D) powder; e. s. aq. (OR, YO and OYT2); i. alc.; s. conc. H_2SO_4 (RV–V Bkn (D)). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**480**
Greenish-black powder w. metallic lustre; d. s. c. aq.; e. s. hot aq. (OS2 and O–YO Bkn (L)); s. alc. (ORS2); s. conc. H_2SO_4 (BG Bkn (L)). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, –; NaOH, +; Cr, Cu and Ca, all –. — Dyeing: CT; paper.	**481**

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF YELLOW-ORANGE
482	Aft-chr. [+] (RVS2). H_2SO_4...R. NaOH...(f) VRS1.	(1) OT4 dis. (2) Cotton, O Bkn. (3) Wool, YOS1.	**AZARINE S [M].** Ammonium bisulphite deriv. of the monazo dyestuff — dichloraminophenolhydrazo-β-naphtholsulphonate of ammonium. — (1883).
483	Aft-chr. [−] OY − OYS1. H_2SO_4...RS2 NaOH...(f) W. gray to black.	(1) Compl. dis.; pers.-ret., YO Bkn (v.L). (2) Cotton, YT2. (3) Wool, YO→ bril.	**INDIAN YELLOW J [H].**
484	Aft-chr. [+] (OR Bkn (v.L) − W. gray). H_2SO_4...YO–OY, T1 sl. dull. NaOH...OT1→.	(1) Compl. dis. (10 sec.). (2) Cotton, ROT2. (3) Wool, YOT1.	**ANTHRACENE CHROME BROWN D [C].** (Intro. 1902).
			NITROSAMINE RED [B].
485	Aft-chr. [−] (YO–Y Bkn (L)). H_2SO_4...O Bkn (M)→. NaOH...←OY.	(1) Compl. dis. (1 min.). (2) Cotton, YOT1. (3) Wool, YO.	**CHRYSOIDINE Y [B].**
486	Aft-chr. [−] (YO–Y Bkn (M)). H_2SO_4...YO Bkn (M+)→. NaOH...OY.	(1) Compl. dis. (½ min.). (2) Cotton, YOT1. (3) Wool, YO.	**CHRYSOIDINE R [B].**
488	Aft-chr. [−] (YOS1→). H_2SO_4...(f) V. NaOH...OR Bkn (M).	(1) Compl. dis. (1 min.). (2) Cotton, orange gray (L). (3) Wool, YO Bkn (M).	**BENZO DARK BROWN EXT. [By].**
489	Aft-chr. [−] (deeper). H_2SO_4...(f) VRS1. NaOH...OR.	(1) YOT3 dis. (2) Cotton, YOT1. (3) Wool, YO v. dull.	**CONGO BROWN G [A].** Trisazo dyestuff: salicylic ac. (CO_2H: N_2: OH = 1:3:6) + *benzidine* + (N_2: OH: OH = 1:2:4) resorcine (N_2: N_2 = 1 : 3) + *sulphanilic Ac.* — (1888).
490	Aft-chr. [−]. H_2SO_4...VRT1 dull. NaOH...RO Bkn (D).	(1) Compl. dis. (⅓ min.). (2) Cotton, YO Bkn (L). (3) Wool, YO Bkn (M).	**PEGU BROWN G [L].** (Intro. 1897).
491	Aft-chr. [−] (alm. unchanged). H_2SO_4...(f) VRS1. NaOH...RO.	(1) Compl. dis. (80 sec.). (2) Cotton, ←YOT1+. (3) Wool, YO v. bril.	**BRILLIANT ORANGE G [A].** (Intro. 1894).
492	Aft-chr. [−] (OYT1). H_2SO_4...←VR sl. dull. NaOH...O−.	(1) Compl. dis. (1 min.). (2) Cotton, O dull. (3) Wool, ←YO dull.	**METAMINE BROWN Conc. [SS].**
493	Aft-chr. [−] (OYS1). H_2SO_4...VRS2. NaOH...O–YO.	(1) Compl. dis. (1½ min.). (2) Cotton, O. (3) Wool, YO dull.	**TRIAZOL BROWN GOO [O].** (Intro. 1903).
494	Aft-chr. [−] (alm. unchanged). H_2SO_4...VRS2. NaOH...O→.	(1) Compl. dis. (½ min.). (2) Cotton, OT1 dull. (3) Wool, YO.	**BENZO BROWN D3G EXT. [By].** (Intro. 1901).
495	Aft-chr. [−] (YOS1). H_2SO_4...(f) VRS1. NaOH...O.	(1) Compl. dis. (1 min.). (2) Cotton, OT1+ dull. (3) Wool, ←YO.	**CHLORAZOL BROWN G [H].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
YO paste w. strong smell of SO_2; sl. s. c. aq.; s. h. aq. (YO, OY and YT2); s. alc. (Y); s. conc. H_2SO_4 (R and VRT2). — Ppt. tests: NaOH, + (V). — Dyeing: Lakes, printing.	**482**
Orange-yellow powder; s. h. aq. and alc. (yellow); s. conc. H_2SO_4 (←R). — Dyeing: WGS.	**483**
RS2→ powder; e. s. aq. (ORS2, OY and OYT2); s. alc. (YO); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4 and Cr, +; NaOH and Ca, −; Cu, + compl. — Dyeing: WCh.	**484**
See No. 1044 for description.	
RS2 powder; e. s. aq. (OR, OY and YT2); e. s. alc. (OR); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all −; NaOH, + (OY). — [" Chrysoidine Y [H] [Lev] " is true chrysoidine, i. e. the hydrochloride of m-benzene-azo-m-diaminobenzene.] — Dyeing: WN, SA, CT.	**485**
RS2 powder; e. s. aq. (OR and Y-OY, T2); e. s. alc. (OR); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all −; NaOH, + (YO). — Dyeing: WN; Sa; CT.	**486**
Black powder; e. s. aq. (brownish-black and dark brown); s. alc. (R Bkn (L)); s. conc. H_2SO_4 (BV sl. dull). — Ppt. tests: H_2SO_4, + compl.; NaOH (RS2) and Ca, −; Cr, + alm. compl.; Cu, +. — Dyeing: CD.	**488**
Reddish-black powder; e. s. aq. (RS1, YO and OYT2); s. alc. (YO); s. conc. H_2SO_4 (RV and VR). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + alm. compl.; NaOH, − (R). − Dyeing: CD.	**489**
Black powder; e. s. aq. (v. dark brown, RO Bkn (D) and R Bkn (L)-gray); s. alc. (R Bkn (D)); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	**490**
ROS2 powder; s. aq. (turbid RO, OY and ←YT2); s. alc. (OY); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, + compl.; NaOH, −; Cr and Cu, + alm. compl.; Ca, +. — Dyeing: CD, or aftertreated w. $CuSO_4$.	**491**
OR Bkn (D) powder; e. s. aq. (turbid ORS2, YO dull and OYT2); s. alc. (←OY); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, Cr and Cu, + compl.; NaOH, −; Ca, +.	**492**
R Bkn (D) powder; e. s. aq. (sl. turbid ORS2, YO sl. dull and OYT2); sl. s. alc. (OYT1 +); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, −; Ca, +. — Dyeing: CD.	**493**
Description same as for No. 493 above.	**494**
Reddish-black powder; e. s. aq.(turbid ORS2, OS1 and YOT2); s. alc. (YO); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, −; Ca, +. — Dyeing: CD.	**495**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
496	Aft-chr. [−] (YOS2). H_2SO_4...(f) ←VR. NaOH...OS1.	(1) Compl. dis. (1⅓ min.). (2) Cotton, ←O Bkn (M). (3) Wool, YOS1.	**OXYDIAMINE BROWN RN** [C].
497	Aft-chr. [−] (O Bkn (M)→). H_2SO_4...VR sl. dull. NaOH...O–YO.	(1) ⅘ dis. (2) Cotton, OT1 dull. (3) Wool, ←YO.	**TOLUYLENE BROWN R** [O]. Tetrakisazo dyestuff: *2 mol. naphthionic ac.* + (N_2: NH_2: NH_2 = 1:2:3), 2 mol. m-phenylenediamine, (N_2: N_2 = 1 : 5) + *1-methyl-2,6-diaminobenzenesulphonic ac.*(4). — (Intro. 1890).
498	Aft-chr. [−] (OY). H_2SO_4...VRS1. NaOH...O.	(1) Compl. dis. (1 min.). (2) Cotton, YOT2. (3) Wool, YO.	**COLUMBIA ORANGE R** [A]. Polyazo dyestuff. (Intro. 1899).
499	Aft-chr. [−]. H_2SO_4...VRS1. NaOH...O→ dull.	(1) Compl. dis. (1 min.). (2) Cotton, O Bkn (M)→. (3) Wool, YO→ dull.	**DIAMINE CATECHINE G** [C]. (Intro. 1896).
500	Aft-chr. [−]. H_2SO_4...(f) VRS1. NaOH...ORS1.	(1) Alm. compl. dis. (2) Cotton, O Bkn (M)→. (3) Wool, YO–O, S1+.	**CUPRANIL BROWN G** [I].
501	Aft-chr. [−] (YOS1). H_2SO_4...(f) VR. NaOH...ROS1.	(1) Compl. dis. (1 min.). (2) Cotton, O Bkn (M). (3) Wool, YOS1+.	**CUPRANIL BROWN R** [I].
502	Aft-chr. [−] (alm. unchanged). H_2SO_4...(f) VR Bkn (D). NaOH...Y Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, O Bkn (L), grayish. (3) Wool, YO Bkn (M).	**DIPHENYL CATECHIN G** [G]. Disazo dyestuff: *4-nitrosostilbenedisulphonic ac.(2,2′)-4′-azo-aniline* (*N_2 : NH_2 = 1 : 4*) + 2-dimethylaminonaphthol(8)-sulphonic ac.(6), (N_2 = 7). — (1899).
503	Aft-chr. [−] (Bkn tone). H_2SO_4...R. NaOH...O.	(1) Compl. dis. (⅔ min.). (2) Cotton, OT1. (3) Wool, YO–O.	**TANNIN ORANGE R** [C]. Monazo dyestuff: *p-aminobenzyldimethylamine* + β-naphthol, (N_2 = α). — (1892).
504	Aft-chr. [−] (alm. unch.) H_2SO_4...←R. NaOH...YO Bkn (D).	(1) YT2− dis. (2) Cotton, Y Bkn (M) − gray. (3) Wool, YO Bkn (D)→.	**ALPHANOL BROWN B** [C]. (Intro. 1908).
505	Aft-chr. [−]. H_2SO_4...(f) RS1. NaOH...(f) black.	(1) Compl. dis. (1½ min.). (2) Cotton, YT2–3. (3) Wool, YO bril.	**CITRONINE NE** [P].
506	Aft-chr. [−] (YO Bkn (M)). H_2SO_4...OR Bkn (M). NaOH...YO–O.	(1) Compl. dis. (1 min.). (2) Cotton, OT1 + dull. (3) Wool, YOS1→.	**TOLUYLENE BROWN G** [O]. Disazo dyestuff: 1 mol. *1-methyl-2, 6-diaminobenzenesulphonic ac.*(*4*) + 1 mol. m-phenylenediamine, (NH_2 : NH_2 : N_2 : N_2 = 1 : 3 : 4 : 6). — (Intro. 1891).
507	Aft-chr. [−] (YOS1). H_2SO_4...O Bkn (M). NaOH...OY.	(1) Compl. dis. (1½ min.). (2) Cotton, O dull. (3) Wool, YO.	**PARA BROWN G** [By].
508	Aft-chr. [−] (OY Bkn (M+)). H_2SO_4...O Bkn (M). NaOH...OY.	(1) Compl. dis. (1 min.). (2) Cotton, YOS1. (3) Wool, YO→; YO.	(1) **CHRYSOIDINE E** [B]. (2) **CHRYSOIDINE AG Cryst.** [C].
509	Aft-chr. [−] (OY Bkn (M–L)). H_2SO_4...YO Bkn (M). NaOH...←OY.	(1) Compl. dis. (50 sec.). (2) Cotton, YOT2. (3) Wool, YO dull.	**CHRYSOIDINE** [B]. Monazo dyestuff: *aniline* + m-phenylene-diamine, (N_2 = 2). — (1875).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Reddish-black powder; e. s. aq. (v.D. brown, ORS2 and YO Bkn (L)); alm. i. alc.; s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, +. — Dyeing: CD.	**496**
OR Bkn (M) powder; e. s. aq. (ORS2, YO and OYT2); s. alc. (YO); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all −; Cr, + compl. — Allied brands; Toluylene Brown [By]. — Dyeing: CD.	**497**
R Bkn (M) powder; e. s. aq. (turbid ORS2, YO dull and OYT2); sl. s. alc. (OY–YO); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, ±; Ca +. — Dyeing: CD.	**498**
Black powder; s. aq. (turbid v. dark brown, O Bkn (D) and YO Bkn (L)); sl. s. alc. (OYT1); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, Cr and Cu, all + ; NaOH and Ca, −. — Dyeing: CD.	**499**
W gray (v.D) powder; e. s. aq. (ORS2, OS1 and OYT2→); alm. i. alc.; s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all −; Cr, + alm. compl. — Dyeing: CD-Aft. w. Cu.	**500**
Dark brown powder; e. s. aq. (RS2, YO dull and YOT2→); sl. s. alc. (YO→); s. conc. H_2SO_4 (V and BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, −; Cu, +; Ca, ±. — Dyeing: CD-Aft. w. Cu.	**501**
Black powder: e. s. aq. (v. dark brown, YOS1 and OYT2); i. alc.; s. conc. H_2SO_4 (V dull). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	**502**
ORS1 powder containing metallic green cryst.; e. s. aq. (O, YO and YOT2); s. alc. (YO); s. conc. H_2SO_4 (←R and VRT2).— Ppt. tests: H_2SO_4, Cr, Cu and Ca, all −; NaOH, ±. — Dyeing: CT, leather.	**503**
Black powder; e. s. aq. (OY Bkn); sl. s. alc. (YO Bkn→ w. strong green fluor.); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: WA.	**504**
ROS1 powder; s. aq. (YO→, Y and YT2); s. alc. (YO→); s. conc. H_2SO_4 (R–VR). — Ppt. tests: H_2SO_4, NaOH (R sl. Bkn), Cu and Ca, all −; Cr, +. — Dyeing: SA.	**505**
R Bkn (D) powder; e. s. aq. (turbid ORS2, YO and OYT2); s. alc. (OY–YO); s. conc. H_2SO_4 (OR Bkn (M)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, −; Cu, +. — Allied brands: Toluylene Brown G. — Dyeing: CD.	**506**
ROS2 powder; d. s. aq. (OY − and OYT2); sl. s. alc. (Y); s. conc. H_2SO_4 (OR Bkn). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all −. — Dyeing: CDv. (w. diazotized p-nitraniline).	**507**
Fragments or crystals w. brassy lustre; e. s. aq. (RO, OY and YT2); e. s. alc. (RO); s. conc. H_2SO_4 (Y and OY). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all −; NaOH, + or ± (YO–OY). — Dyeing: WN, SA, CT.	**508**
ORS2 powder; e. s. aq. (OR, OY and OYT2→); e. s. alc. (OR→); s. conc. H_2SO_4 (Y and OY). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all −; NaOH + (OY). — Allied brands: Chrysoidine G [DH] [G] [I]; Chrysoidine [A] [By] [F] [K] [M] [Mo] [Sch] [t.M]; Chrysoidine R [C]; Chrysoidine J [J]; Chrysoidine Y [H] [Lev]. — Dyeing: WN; SA; CT.	**509**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharges and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
510	Aft-chr. [−]. H_2SO_4...OYS1. NaOH...OY.	(1) Compl. dis.; (YT3− sol.). (2) Cotton, YO dull. (3) Wool, YO→.	**PYRAMINE ORANGE 3G** [B]. Disazo dyestuff: 1,7-diaminonaphthalenedisulphonic ac.(3,6)(N_2 = 1) + *benzidine* + 1,3-diamino-6-nitrobenzene,(N_2 = 4). — (1898).
512	Aft-chr. [−](alm. unch.). H_2SO_4...(f) BS1. NaOH...YO.	(1) Compl. dis. (2) Cotton, YO sl. dull. (3) Wool, YO.	**DIPHENYL CHRYSOIN RR** [G]. Disazo dyestuff: *4-nitrosostilbenedisulphonic ac.(2,2')-4'-azoaniline* + phenetol,(N_2 : OEt = 1 : 4).—(1899).
513	Aft-chr. [−] (YO→ sl. dull). H_2SO_4...BVS1. NaOH...←O.	(1) Compl. dis. (2) Cotton, O–O, T1. (3) Wool, YOT1+.	**BENZO ORANGE R** [By]. Disazo dyestuff: salicylic ac.(CO_2H : OH : N_2 = 1 : 2 : 4) + *benzidine* + naphthionic ac.(N_2 : NH_2 = 2 : 1.) — (1887).
514	Aft-chr. [−](alm. unch.). H_2SO_4...(f) VS2. NaOH...OR Bkn (D).	(1) Compl. dis. (⅔ min.). (2) Cotton, OR Bkn (D). (3) Wool, ←YOS2–3.	**CHROMANILE BROWN 2G** [A]. (Intro. 1896).
515	Aft-chr. [−] (alm. unchanged). H_2SO_4...(f) V Bkn (D). NaOH...OS1.	(1) Compl. dis. (1 min.). (2) Cotton, ←R Bkn (L). (3) Wool, YOS2.	**DIANIL BROWN R** [M].
516	Aft-chr. [−] (OYT2−). H_2SO_4...(*On cotton*, RV Bkn (v.D). NaOH...On cotton, R.	(1) Compl. dis. (½ min.). (2) Cotton, ORT2. (3) Wool, YOT2− (too pale for acid and alkali tests).	**HESSIAN BROWN BB** [L]. Tetrakisazo dyestuff: 2 mol. sulphanilic ac. + 2 mol.(N_2 = 3), 1,3-dihydroxybenzene,(N_2 = 5) + 1 mol. *benzidine*. — (1899).
517	Aft-chr. [−] (alm. unchanged). H_2SO_4...(f) RV. NaOH...ROS1→.	(1) Alm. compl. dis. (2) Cotton, O–YO Bkn (L). (3) Wool, YOS1–2.	**TRISULPHON BROWN B** [S]. Trisazo dyestuff: (salicylic ac. + *a paradiamine*) + *aminonaphtholdisulphonic ac. R* + a metadiamine. — (1897).
518	Aft-chr. [−]. H_2SO_4...(f) RV. NaOH...YO→.	(1) OYT2− dis. (1⅓ min.). (2) Cotton, YT2. (3) Wool, ←OY bril.	**DIAMINE GOLD YELLOW** [C]. Disazo dyestuff: phenol,(N_2 = 4) + 1,5-diaminonaphthalenedisulphonic ac.(3,7) + phenetol(N_2 = 4). — (1890).
519	Aft-chr. [−] (Y Bkn (L). H_2SO_4...W gray. NaOH...Y Bkn (D).	(1) Compl. dis. (15 sec.). (2) Cotton, B Bkn (L). (3) Wool, ←YO Bkn (D); blk.	**NEROL B EXTRA** [A].
			DIRECT ORANGE 2R [K].
520	Aft-chr. [−]. H_2SO_4...V gray (D). NaOH...O Bkn (D).	(1) Compl. dis. (1½ min.). (2) Cotton, VR Bkn (M). (3) Wool, YOS3.	**DIAMINE NITRAZOL BROWN BD pat.** [Math].
			SECTION OF ORANGE-YELLOW
			(1) **CHRYSAMINE R Conc.** [SS]. (2) **CHRYSAMINE R** [By]. (3) **CHRYSAMINE G Conc.** [SS]. (4) **CHRYSAMINE** [P].
521	Aft-chr. [−]. H_2SO_4...VR–R. NaOH...OR.	(1) Compl. dis. (1 min.). (2) Cotton, YT1–2. (3) Wool, ←OY.	**ONE DIP YELLOW AC** [K].

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
R Bkn (M) powder; s. aq. (turbid OR, YO and OYT2); sl. s. alc. (OYT1); s. conc. H_2SO_4 (OY dull). — Ppt. tests: H_2SO_4, Cu and Ca, all – ; NaOH, + ; Cr, +. — Dyeing: CD.	**510**
ROS2 powder; e. s. aq. (turbid OS1, YO and OYT2); s. alc. (OYT1); s. conc. H_2SO_4 (B and VB). — Ppt. tests: H_2SO_4, + (black); NaOH, Cu and Ca, all – ; Cr, + alm. compl. — Dyeing: CD.	**512**
ORS2 powder; e. s. aq. (OR, YO and YOT2); e. s. alc. (O); s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4, + compl.; NaOH, Cr and Cu, all + alm. compl.; Ca, +. — Allied brands: Benzo Orange R [A] [L]; Direct Brilliant Orange 3R [PL]. — Dyeing: CD; WCh.	**513**
Black powder; e. s. aq. (v. D brown, O Bkn (D) and YO Bkn (L)); sl. s. alc. (R Bkn (L)); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, – ; Ca, +. — Dyeing: CD-Aft. w. Cu or Cr.	**514**
V. dark brown powder; e. s. aq. (RS3 and OR Bkn (M and L)); i. alc.; s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD; or CDv. w. Azophor Red PN. (Test 20; no change).	**515**
Brownish-black powder; e. s. aq. (RS2, OR–R Bkn (M and L)); i. alc.; s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**516**
Black powder; e. s. aq. (v. D brown and YO Bkn (L)); i. alc.; s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, ± ; NaOH (RS2), Cu and Ca, all – ; Cr, + compl. — Allied brands: Trisulphon brown G, GG (S). — Dyeing: CD-Aft. w. Cu or Cr.	**517**
YO powder; s. aq. (turbid OY, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all + ; Cr, + alm. compl. — Dyeing: CD.	**518**
D. red-brown powder; e. s. aq. (opaque, BVS1 dull and BVT2); e. s. alc. (opaque RVS2 and VT2); s. conc. H_2SO_4 (cool gray (L)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca all ±. — [Nerol B, 2B, 4B, 2BG and 4BG (A), pat. 1897, are trisazo derivatives having sulphonic acids of p-aminodiphenylamine or its homologues as first, α-naphthylamine as second, and naphthols or their sulphonic acids as end components.] — Dyeing: WGS.	**519**
See No. 150 for description.	
Black powder; e. s. aq. (v. dark brown, YO-O Bkn (M) and YO Bkn (L); i. alc.; s. conc. H_2SO_4 (C gray (D)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD and CDv. w. diazotized-p-nitraniline.	**520**
COLORS ON WOOL.	
See Nos. 1060 and 1061 for descriptions.	
OS1→ powder; e. s. aq. (YO, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4 (BV) and Cr, + ; NaOH (OR), Cu and Ca, all –. — Dyeing: WGS.	**521**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
522	Aft-chr. [−]. H_2SO_4...(f) VR. NaOH...OR.	(1) Compl. dis., 50 sec. (2) Cotton, YT2. (3) Wool, ←OY bril.	**FAST YELLOW 3GX [B].**
523	Aft-chr. [−]. H_2SO_4...(f) ←VRS2. NaOH...O bril.	(1) YT3 dis. (2) Cotton, YT2. (3) Wool, OY.	**META CHROME YELLOW 2R EXT. [A].**
524	Aft-chr. [−]. H_2SO_4...(f) VR. NaOH...←OY.	(1) Alm. compl. dis. (2) Cotton, YT2. (3) Wool, OY.	(1) **CHRYSOPHENINE [By].** (2) **CHRYSOPHENINE [A].** (3) **CHRYSOPHENINE G [A].** (4) **CHLORAMINE YELLOW W EXT. [By].** (5) **CHRYSOBARINE G EXT. Conc. (t.M).** (1, 2) Disazo dyestuff: phenol,(N_2 : OH = 1 : 4) + *4,4′ -diaminostilbene-sulphonic ac.*(2,2′) + (OEt : N_2 = 4 : 1), phenetol. — (1886).
525	Aft-chr. [−] (OY Bkn (D)). H_2SO_4...VR–R. NaOH...OY Bkn (D).	(1) YT3 dis. (2) Cotton, W gray (M). (3) Wool, OY Bkn (D).	**DIAMINE BRONZE BROWN PE [C].** **DIAMINE FAST YELLOW M [C].**
526	Aft-chr. [−]. H_2SO_4...(f) VR. NaOH...OY.	(1) OYT4 dis. (2) Cotton, YT1 sl. dull. (3) Wool, OY bril.	**RESIST YELLOW C EXT. [M].**
527	Aft-chr.[−](unchanged). H_2SO_4...R. NaOH...OR–ORS1.	(1) Compl. dis. (1½ min.). (2) Cotton, Y–OY, T2 dull. (3) Wool, OY bril.	**CHROME YELLOW R EXT. [By].**
528	Aft-chr. [−]. H_2SO_4...(f) RS1. NaOH...RO.	(1) Alm. compl. dis. (2) Cotton, YT2. (3) Wool, OY–OYS1.	**DIAMOND FLAVINE G [By].** Monazo dyestuff: (?) + *benzidine* + salicylic ac.(N_2 : OH = 4 : 1). — (1891). **ALIZARINE BROWN POWDER [M].**
529	Aft-chr. [−]. H_2SO_4...R–VR. NaOH...YO–O.	(1) Alm. compl. dis. (2) Cotton, OYT1+ dull. (3) Wool, ←OY.	**TOLUYLENE FAST ORANGE GL [By].** (Intro. 1908).
532	Aft-chr. [−](OY–OYS1). H_2SO_4...(f) OR. NaOH...RO.	(1) Compl. dis. (2) Cotton, YT2. (3) Wool, OY bril.	**ALIZARINE YELLOW G [Lev].**
533	Aft-chr [−] (duller). H_2SO_4...OS2. NaOH...VRS1.	(1) Compl. dis. (15 sec.). (2) Cotton, YOT2−. (3) Wool, OY.	**CHROME BROWN JJ [SS.]**
535	Aft-chr. [−](OYS1). H_2SO_4...OS1. NaOH...YO sl. dull.	(1) YT2− dis. (2) Cotton, Y. (3) Wool, OY bril.	**TURMERIC ROOT [AD].** Rhizome of *Curcuma longa L.*, of Asiatic origin, containing the coloring matter curcumin.
536	Aft-chr. [−] (OYS1). H_2SO_4 ...←YO. NaOH...YO.	(1) YT2− dis. (2 min.). (2) Cotton, YOT2. (3) Wool, ←OY.	**SUDAN G [A].** Azo dyestuff: *aniline* + resorcine, (N_2 : $(OH)_2$ = 1 : 2 : 4 *and* 1 : 2 : 6). — 1875.

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YO powder; e. s. aq. (YO, Y and YT2); s. alc. (YO); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, + compl. (BVS2); NaOH (OR), Cu and Ca, all – ; Cr, + alm. compl.	522
YOS2 powder; s. aq. (turbid YO, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (VR dull). — Ppt. tests: H_2SO_4 and Cu, + compl.; NaOH (RO), Cr and Ca, all +. — Dyeing: WCh. — [See No. 1062].	523
←YO powder; e. s. aq. (OY–YO, Y and YT2); s. alc. (←OY); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, + compl. (RV Bkn (D)); NaOH, Cr, Cu and Ca, all +. — Allied brands: Chrysophenine (L) (SB). — Dyeing: CD.	524
Black powder; e. s. aq. (YO Bkn (v.D) and YO–Y Bkn (L)); s. alc. (YO Bkn (M) w. green fluor.); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4 and Cr, +; NaOH, Cu and Ca, all –. — Dyeing: CD.	525
See No. 1064 for description.	
YO powder; s. aq. (turbid YO, Y and YT2); s. alc. (Y); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4 (VR Bkn (v.D)) and Cr, + compl.; NaOH, + ; Cu and Ca, ±.	526
YO Bkn (M) powder; e. s. aq. (turbid YO, Y and YT2); sl. s. alc. (YT1); s. conc. H_2SO_4 (OR). Ppt. tests: H_2SO_4 and Cu, + compl.; NaOH, + (OR); Cr and Ca, + alm. compl. — Dyeing: WCh.	527
V. dark yellow-brown paste; i. aq.; s. alc. (OY); s. conc. H_2SO_4 (VR). — Dyeing: WCh.	528
See No. 915 for description.	
OS1 powder; e. s. aq. (turbid, O, Y and YT2); s. alc. (Y); s. conc. H_2SO_4 (R–VR). — Ppt. tests: H_2SO_4, + (OY Bkn (v.D)); NaOH, Cu (R Bkn (v.D)) and Ca, all – ; Cr, + compl. — Dyeing: CD.	529
←YOS1 powder; e. s. aq. (sl. turbid OY, Y and YT2); sl. s. alc. (YT1); s. conc. H_2SO_4 (OR). — Ppt. tests: H_2SO_4 and Cu, +; NaOH, ± (RO); Cr, + alm. compl.; Ca, –. — Dyeing: WCh.	532
R–OR, S2 powder; s. aq. (turbid OY, Y and YT2); s. alc. (YO); s. conc. H_2SO_4 (OR Bkn (M)). — Ppt. tests: H_2SO_4, NaOH (R–VR), Cr, Cu and Ca, all –. — Dyeing: WCh.	533
YOS1 powder, or rough ocherous yellow surfaced rhizome 0.5 to 3. cm. in diameter showing YO resinous fracture. Odor and taste pungent, spicy. For histological diagnosis see Winton, p. 602. — For the detection of turmeric in very dilute solutions, as in flavoring extracts, place 15 c.c. of the sol. in a small evaporating dish with a narrow strip of filter paper; add 3 drops of a saturated boric acid solution and 1 drop 10% HCl, and evaporate to dryness on a boiling water bath. The thoroughly dried paper will show a RO, O or OT2 color, changing to broken blue-green, G Bkn (D), or black, when a rod wet with NaOH sol. is drawn over its surface if turmeric is present. If a dye-bath sol. is used for this test, it must first be largely diluted with water. — Dyeing: CD; for coloring curry-powder, butter, cheese, flavoring extracts, wood, wax, etc. — Synonyms: Curcuma, Indian Saffron.	535
OR dull powder; alm. i. aq. (YT1); s. alc. (O); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, NaOH, Cr. Cu and Ca, all –. — Used for coloring varnishes and fats. — Allied brands: Cerasine Orange G (C); Carminnaphte J (DH).	536

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
537	Aft-chr. [−] (Y sl. dull). H_2SO_4...OYT2+. NaOH...OY.	(1) Compl. dis. (1 min.). (2) Cotton, YT1. (3) Wool, OY.	**TOLUYLENE YELLOW [O].** Trisazo dyestuff: *1-methyl-2,6-diaminobenzenesulphonic ac.*(4) + 2 mol. 1, 3-diamino-4-nitrobenzene, (N_2 = 6). — (1896).
538	Aft-chr. [−] (Y→). H_2SO_4...Y Bkn (L). NaOH...OYT1.	(1) Compl. dis., 90 sec. (2) Cotton, OY–Y sl. dull. (3) Wool, OY–Y.	**TOLUYLENE YELLOW G [By].**
539	Aft-chr. [−] (Y). H_2SO_4...Y–OY, T2−. NaOH...YT1.	(1) Compl. dis. (1¼ min.). (2) Cotton, OY. (3) Wool, OY→ − .	**PYRAMINE YELLOW R [B].** Azo dyestuff: nitro-m-phenylenediamine + benzidinesulphonic ac., or thiotolidinesulphonic ac. — (Intro. 1902).
540	Aft-chr. [−] (alm. unchanged). H_2SO_4...(f) ←RV. NaOH...YOS2–3.	(1) Compl. dis. (1 min.). (2) Cotton, slaty RV Bkn (D). (3) Wool, OYS3.	**DIRECT FAST BROWN GG [By].**
			SECTION OF YELLOW
541	Aft-chr. [−] (sl. deeper). H_2SO_4...O–YO. NaOH...←OY.	(1) Compl. dis. (1½ min.). (2) Cotton, YT2. (3) Wool, YT1+.	**COTTON YELLOW G [B].** Disazo dyestuff: 4,4′-*diaminodiphenylurea* + 2 mol. salicylic ac. (N_2 : OH = 4 : 1). — (1888). **BENZO FAST YELLOW 5GL [By].**
542	Aft-chr. [−]. H_2SO_4...YOT1→. NaOH...←YT1.	(1) Compl. dis. (½ min.); pers.-ret., OYT3. (2) Cotton, YT2+ dull. (3) Wool, ←YT1.	**DIAMINE FAST YELLOW AGG [C].**
543	Aft-chr. [−] (YOS2). H_2SO_4...(f) RV Bkn. (M). NaOH...O Bkn (D).	(1) Compl. dis. (1½ min.). (2) Cotton, YO Bkn (D). (3) Wool, ←Y Bkn (M–D).	**BENZO DARK BROWN [By].**
			SECTION OF GREEN-YELLOW
544	Aft-chr. [−]. H_2SO_4...V Bkn (D). NaOH...GYS2.	(1) Compl. dis. (20 sec.). (2) Cotton, VT2. (3) Wool, GY Bkn (M); blk.	**AGALMA BLACK 4B [B].**
545	Aft-chr. [−] (OYS1). H_2SO_4...(f) RV. NaOH...←YOS1.	(1) Compl. dis. (1½ min.). (2) Cotton, C gray (D). (3) Wool, ←GY Bkn (M); blk.	**DIAMINERAL BLACK B [C].**
			SECTION OF YELLOW-GREEN
546	Aft-chr. [−] (YS2→). H_2SO_4...(f) RV. NaOH...G–BG Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, BGT2. (3) Wool, YGS2.	**COLUMBIA GREEN [A].** Trisazo dyestuff: (*p-aminobenzenesulphonic ac.* + 1-aminonaphthol (8)-sulphonic ac.(4)) + *benzidine* + salicylic ac. — (1893).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
OYS2 powder; s. aq. (turbid ←YOS1, Y and YT2); s. alc. (YT1); s. conc. H_2SO_4 (←OYT). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, +; Cr, + compl. — Dyeing: CD.	**537**
YOS2 powder; s. aq. (turbid OY, Y and YT2); s. alc. (Y); s. conc. H_2SO_4 (YO sl. Bkn). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all +; Cr, + compl. — Dyeing: CD.	**538**
OS1 powder; alm. i. c. aq.; s. h. aq. (turbid O, Y and YT2); s. alc. (Y); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, Cr and Cu, +; NaOH, ±; Ca, –. — Dyeing: CD.	**539**
Dark brown powder; e. s. aq. (OR Bkn (D)); s. alc. (OY→ and YT2); s. conc. H_2SO_4 (V→ and RVT2). — Ppt. tests: H_2SO_4, Cr, + compl.; Cu, –, or ±; Ca, –. — Dyeing: CD.	**540**
COLORS ON WOOL.	
←OYS1 powder; e. s. aq. (Y and YT2); e. s. alc. (GYT1 and GYT2); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, – (←YO); Cr, + alm. compl. — Dyeing: CD.	**541**
See No. 1079 for description.	
O dull powder; e. s. aq. (OY and YT2); d. s. alc. (OYT2); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, Cu, Ca and NaOH, all –; Cr, + alm. compl. — Dyeing: CD.	**542**
Black powder; s. aq. (OYS2); s. alc. (OR Bkn (M)); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, + (YGS3); NaOH, ± (O Bkn (M)); Cr, + compl. (YG Bkn (D)); Cu and Ca, +. — Dyeing: CD.	**543**
COLORS ON WOOL.	
Brown-black powder; e. s. aq. (opaque, VB, VBT2); s. alc. (opaque, BT2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, NaOH, Ca, – or ±; Cr, + compl.; Cu, ±. — Dyeing: WGS.	**544**
Black powder; s. aq. (opaque, BV and BVT2); i. alc.; s. conc. H_2SO_4 (B intense). — Ppt. tests: H_2SO_4, Cr, Cu, Ca, + compl.; NaOH, – (VR Bkn in thin layers). — Dyeing: CD, aftertreated w. Cu and Cr.	**545**
COLORS ON WOOL.	
C. gray (D) powder; e. s. aq. (BG and BGT2); alm. i. alc.; s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH, – (bluer); Cu, – (G Bkn (D)). — Dyeing: CD.	**546**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF GREEN
547	Aft-chr. [−] (YGS2). H_2SO_4...(f) ←VRS2. NaOH...YG Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, BG− dull. (3) Wool, GS2.	**OXAMINE GREEN G [B].**
548	Aft-chr. [−]. H_2SO_4...(f) ←VRS1. NaOH...YG Bkn (D).	(1) Compl. dis. (45 sec.). (2) Cotton, BGT1+ dull. (3) Wool, GS2→.	**CHLORAZOL GREEN G [H].**
549	Aft-chr. [−]. H_2SO_4...(f) V Bkn (D). NaOH...←GB Bkn (D).	(1) Compl. dis. (35 sec.). (2) Cotton, ←BGS1. (3) Wool, G–BG, S2.	**CHLORAMINE GREEN B [S].** Trisazo dyestuff: *dichloraniline* + 1-aminonaphthol(8)-disulphonic ac. (4,6) + *benzidine* + phenol or salicylic ac. — (1898).
550	Aft-chr. [−] (BGS1). H_2SO_4...(f) RVS1. NaOH...←G Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, BGT1. (3) Wool, GS2→.	**DIAMINE GREEN G [C].** Trisazo dyestuff: (*p-nitraniline* + 1-aminonaphthol(8)-disulphonic ac. (3,6), (N_2 : OH = 2 : 1)) + *benzidine* + salicylic ac., (N_2 : OH = 4 : 1). — (1891).
			SECTION OF BLUE-GREEN
551	Aft-chr. [−]. H_2SO_4...BGS1. NaOH...BGS2.	(1) Compl. dis. (¼ min.). (2) Cotton, BGT1. (3) Wool, BGS1.	**BRILLIANT BENZO GREEN B [By].** (Intro. 1899).
552	Aft-chr. [−]. H_2SO_4...(f) VBS2. NaOH...BGS2.	(1) Compl. dis. (1 min.). (2) Cotton, BG–G Bkn (M). (3) Wool, BGS1–2.	**DIANIL GREEN G [M].**
553	Aft-chr. [−]. H_2SO_4...BV Bkn (D). NaOH...BGS2.	(1) Compl. dis. (½ min.). (2) Cotton, ←BG v. dull. (3) Wool, BGS1.	(1) **DIPHENYL GREEN KGC** (Kell) (2) **BENZO GREEN C [By].** (3) **OXAMINE GREEN B [B].** — (Intro. 1904).
554	Aft-chr. [−]. H_2SO_4...(f) BV→ Bkn (D). NaOH...BGS2.	(1) Compl. dis. (2) Cotton, BG v. dull. (3) Wool, BGS1.	**DIAMINE GREEN CL [C].**
555	Aft-chr. [−]. H_2SO_4...(f) BV Bkn (D). NaOH...(f) BG Bkn (D).	(1) Compl. dis. (⅓ min.). (2) Cotton, BGT1. (3) Wool, BGS1.	**BENZO DARK GREEN B [By].** (Intro. 1898).
556	Aft-chr. [−] (← GS3). H_2SO_4...(sol.) VB Bkn (L); (f) alm. blk. NaOH...GS2.	(1) Compl. dis. (1 min.). (2) Cotton, G Bkn (M)→. (3) Wool, BG–G dull.	**DIAMINE GREEN B [C].** Trisazo dyestuff: (*p-nitraniline* + 1-aminonaphthol(8)-disulphonic ac. (3,6), (N_2 : NH_2 = 2 : 1)) + *benzidine* + phenol (N_2 : OH = 2 : 1). — (1891).
557	Aft-chr. [−]. H_2SO_4...V Bkn (D). NaOH...GBS1.	(1) Compl. dis. (½ min.). (2) Cotton, BGT1→ dull. (3) Wool, BG→ dull.	**ALIZARINE GREEN SS [By].**
558	Aft-chr. [−]. H_2SO_4...RVS1. NaOH...(f) W gray (D).	(1) Compl. dis. (¾ min.). (2) Cotton, G Bkn (M)→. (3) Wool, ←BGS1.	**DIPHENYL GREEN G [G].** Trisazo dyestuff: *o-chlor-p-toluidine* + 1-aminonaphthol(8)-disulphonic ac. (3,6), (N_2 : NH_2 = 2 : 1)) + *benzidine* + phenol (N_2 : OH = 4 : 1). — (1898).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Cool gray (D) powder; e. s. aq. (G–BG); sl. s. alc. (BG); s. conc. H_2SO_4 (V→). — Ppt. tests: H_2SO_4 (bluer), Cr and Cu, all + compl.; NaOH, – (G Bkn (M)); Ca, +. — Dyeing: CD.	**547**
Greenish-black powder; e. s. aq. (opaque, ←BG and BGT2); s. alc. (BGS1 and BGT2); s. conc. H_2SO_4 (RV dull). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**548**
Black powder; e. s. aq. (opaque, BG and BGT2); s. alc. (opaque, BG); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**549**
Dark gray powder; e. s. aq. (G–BG and ←BGT2); sl. s. alc. (BG); s. conc. H_2SO_4 (V→). — Ppt. tests: H_2SO_4, Cr, + compl.; NaOH, – (G Bkn (M)); Cu and Ca, +. — Dyeing: CD.	**550**
COLORS ON WOOL.	
Grayish-black powder; e. s. aq. (BG→); s. alc. (BG–GB); s. conc. H_2SO_4 (v. dull RV Bkn (L)). — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH, ± (RVT1 dull). — Dyeing: CD.	**551**
Dark brown powder; s. aq. (G Bkn (M)); sl. s. alc. (GT1→); s. conc. H_2SO_4 (B Bkn (M)). — Ppt. tests: H_2SO_4, – or ±; NaOH, Cr, Cu and Ca, all + compl. — Dyeing: CD.	**552**
Black powder; s. aq. (BG); s. alc. (BG→); s. conc. H_2SO_4 (V sl. dull). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (G–BG Bkn (M)); Cu and Ca, –. — Dyeing: CD.	**553**
Black powder; e. s. aq. (BG); s. alc. (BG–GB); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (BG Bkn (M)); Cu and Ca, –. — Dyeing: CD.	**554**
Black powder; e. s. aq. (BGS1); s. alc. (BG→); s. conc. H_2SO_4 (BVS1→). — Ppt. tests: H_2SO_4, ± (v. dark neutral gray); NaOH, – (BV Bkn (D)); Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	**555**
Black powder; s. aq. (BGS1); s. alc. (BG→); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, ± (compl. when hot; dark B (D)); NaOH, – (G Bkn (D)); Cr, + compl.; Cu and Ca, –. — Dyeing: CD.	**556**
Black powder; e. s. aq. (GB); s. alc. (←GB); s. conc. H_2SO_4 (B Bkn (M)). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – (BS1). — Dyeing: WCh.	**557**
Black powder; s. aq. (G Bkn (M)→); alm. i. alc. (←BGT2); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, + compl. (alm. black); NaOH, – (YG Bkn (L)); Ca, – . — Dyeing: CD.	**558**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
559	Aft-chr. [−]. H_2SO_4...(f) W gray (D). NaOH...G Bkn (D).	(1) Compl. dis. (½ min.). (2) Cotton, BGT1. (3) Wool, ←BGS1.	**DIAMINE DARK GREEN N** [C].
560	Aft-chr. [−]. H_2SO_4...(f) C gray (D). NaOH...GBS2.	(1) Compl. dis. (½ min.). (2) Cotton, ←B Bkn (M). (3) Wool, BG Bkn (L).	**DIAMINE BLACK HW** [C]. Trisazo dyestuff: (*p-nitraniline* + 1-aminonaphthol(8)-disulphonic ac.(3,6), ($N_2 : NH_2 = 2 : 1$)) + *benzidine* + 2-aminonaphthol(8)-sulphonic ac.(6). — (Pat. 1891).
			SECTION OF GREEN-BLUE
561	Aft-chr. [−] (BG Bkn (M)). H_2SO_4...BGS1. NaOH...←GB dull.	(1) Compl. dis. (⅓ min.). (2) Cotton, ←GBT2. (3) Wool, GB Bkn (M); blk.	**NAPHTHOL BLUE BLACK BN** [C].
562	Aft-chr. [−] (BG dull). H_2SO_4...GB Bkn (M). NaOH...GB dull.	(1) Compl. dis. (20 sec.). (2) Cotton, GBT1. (3) Wool, GBT1+, sl. dull.	**DIRECT BLUE GGG** [SS].
563	Aft-chr. [−] (BGS1). H_2SO_4...B Bkn (M). NaOH...BG Bkn (M).	(1) Compl. dis. (20 sec.). (2) Cotton, GBT1. (3) Wool, BG–B Bkn (M).	**DIRECT BLUE HW** [SS].
564	Aft-chr. [−] (BGS1). H_2SO_4...BV Bkn (D). NaOH...←B Bkn (D).	(1) Compl. dis. (½ min.). (2) Cotton, ←GBT2+ dull. (3) Wool, GBT1 dull.	**NAPHTHAMINE INDIGO G** [K].
	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).		
			SECTION OF BLUE
565	H_2SO_4...(f) VR dull. NaOH...←BS1.	(1) ORT3 dis.; pers. ret., BGT2 (on edges). (2) Cotton, BT2. (3) Wool, ←BS1 dull.	**SULPHONE AZURINE** [By].
566	H_2SO_4...R Bkn (L). NaOH...C gray (D).	(1) Compl. dis. (1 min.). (2) Cotton, BG Bkn (M). (3) Wool, B Bkn (L); blk.	**GLORIA BLACK B** pat. [C].
567	H_2SO_4...G Bkn (M). NaOH...B–VB Bkn (D).	(1) Compl. dis. (15 sec.). (2) Cotton, RVT2. (3) Wool, B Bkn (M); blk.	**AMINE BLACK 4BG** [A].
568	H_2SO_4...BGS1→. NaOH...BS1.	(1) Compl. dis. (40 sec.). (2) Cotton, BT2. (3) Wool, BT1 dull.	(1) **BENZO SKY BLUE** Conc. [By]. (2) **BENZO SKY BLUE** [By].
569	H_2SO_4...←BGS1. NaOH...BS2→.	(1) Compl. dis. (40 sec.). (2) Cotton, BT2− dull. (3) Wool, B Bkn (v.D).	**DIAMINOGENE SKY BLUE N** [C].
570	H_2SO_4...BGS1→. NaOH...VBS1.	(1) Compl. dis. (¾ min.). (2) Cotton, GB–B, T1. (3) Wool, BT1→ dull.	**OXAMINE BLUE 3B** [B].

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Black powder; s. aq. (BGS1); s. alc. (BG→); s. conc. H_2SO_4 (BV Bkn (M)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (C gray (D)); Cu and Ca, –. — Dyeing: CD.	**559**
N gray (D) powder; e. s. aq. (GBS1→); alm. i. alc. (BGT2); s. conc. H_2SO_4 (B dull). — Ppt. tests: H_2SO_4, + compl. (VBS1); NaOH, –. Ca, –. — Dyeing: CD.	**560**
COLORS ON WOOL.	
Black powder; e. s. aq. (B dull and BT2); s. alc. (GB); s. conc. H_2SO_4 (BG→). — Ppt. tests: H_2SO_4 and Cr, +; NaOH, Cu and Ca, all –. — Dyeing: WGS.	**561**
C gray (D) powder; e. s. aq. (opaque, GB and GBT2); alm. i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, NaOH, Cu, Ca, all –; Cr, + compl. — Dyeing: CD.	**562**
Black powder; e. s. aq. (opaque, GB–BT2); d. s. alc. (greenish blue); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Cu, –; Ca, +. — Dyeing: CD.	**563**
Sl. lustrous black cryst. powder; e. s. aq. (B); i. alc.; s. conc. H_2SO_4 (BT1 dull). — Ppt. tests: H_2SO_4, ± (VB); NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**564**
COLORS ON WOOL.	
Black powder; e. s. aq. (BS2 and ←BT2); s. alc. (VBS2 and BT2); s. conc. H_2SO_4 (VR). — — After-chroming: GBT1. — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Cu, ±; Ca, –. — Dyeing: CD.	**565**
Black powder; s. aq. (opaque, RV Bkn); s. alc. (opaque, BV and BVT2); s. conc. H_2SO_4 (V Bkn (M)). — After-chroming: Y–OY, S1. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu and Ca, ±. — Dyeing: WSA.	**566**
D. brown powder; e. s. aq. (opaque, GB and BT2); s. alc. (opaque, BS1 and BT2); s. conc. H_2SO_4 (BG). — After-chroming: black. — Ppt. tests: H_2SO_4, ±; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**567**
Gray powders; alm. i. aq.; e. s. alc. (VB and BT2); s. conc. H_2SO_4 (BG→). — After-chroming: alm. unchanged. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**568**
Dark gray powder; e. s. aq. (opaque, BV and BVT2); s. alc. (BS2 and BT2); s. conc. H_2SO_4 (BG–GB). — After-chroming: N–W gray (M). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, + or ±. — Dyeing: CDv. (Color unchanged in Test 15).	**569**
V. dark gray powder; e. s. aq. (VB and B–VB,T2); i. alc.; s. conc. H_2SO_4 (GB–BG). — After-chroming: BV Bkn (D). — Ppt. tests: H_2SO_4 and Cr, +; NaOH and Ca, –; Cu, ±. — Dyeing: CD.	**570**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
571	H_2SO_4...BGS1→. NaOH...BVS1.	(1) Compl. dis. (25 sec.). (2) Cotton, GBT1. (3) Wool, BT1→ dull.	**CHLORAMINE SKY BLUE FF [S].**
572	H_2SO_4...BG. NaOH...BV.	(1) Compl. dis. (15 sec.). (2) Cotton, ←BT2. (3) Wool, BT1−.	**EBOLI BLUE 5B [L].**
573	H_2SO_4...BG→. NaOH...BV Bkn (M).	(1) Compl. dis. (40 sec.). (2) Cotton, BT2. (3) Wool, BT1–2→.	**BENZO CYANINE B [By].** (Intro. 1893).
574	H_2SO_4...BGT1. NaOH...BV–V, T2.	(1) Compl. dis. (40 sec.). (2) Cotton, GBT1. (3) Wool, BT1–2.	**DIAMINE SKY BLUE [C].**
575	H_2SO_4...BG→. NaOH...VT1.	(1) Compl. dis. (30 sec.). (2) Cotton, BT1–2. (3) Wool, BT1–2→.	(1) **CHICAGO BLUE 6B [A].** (2) **DIAMINE SKY BLUE FF [C].** (1) Disazo dyestuff: 2 mol. 1-aminonaphthol(8)-disulphonic ac.(2,4), (N_2= 7) + *dianisdine.* — (1891).
576	H_2SO_4...BGS1→. NaOH...C gray (v.D).	(1) Compl. dis. (⅓ min.). (2) Cotton, B Bkn (M–D). (3) Wool, B Bkn (M) – W gray; black.	**DIAMINE BLACK DB pat. [C].**
577	H_2SO_4...(f) GB–BG, S1 dull. NaOH...BS1.	(1) Compl. dis. (30 sec.). (2) Cotton, VB Bkn (L). (3) Wool, BT1 dull.	**ALPHANOL BLUE BR EXT. [C].** (Intro. 1908).
578	H_2SO_4...(f) GB–BG. NaOH...(f) VBS2.	(1) Compl. dis. (30 sec.). (2) Cotton, GB–GBT1 dull. (3) Wool, BS2.	**DIAZO FAST BLACK G [By].** (Intro. 1899).
579	H_2SO_4...GB–BG. NaOH...BV.	(1) Compl. dis. (30 sec.). (2) Cotton, GBT1. (3) Wool, BT1–2 dull.	(1) **NAPHTHAMINE BLUE 7B [K].** (2) **DIANOL SKY BLUE [Lev].**
580	H_2SO_4...GBS2. NaOH...BV Bkn (D).	(1) Compl. dis. (2) Cotton, B Bkn (M). (3) Wool, B Bkn (D).	**OXAMINE BLACK A [B].** (Intro. 1900).
581	H_2SO_4...←GBS2. NaOH...BV.	(1) Compl. dis. (30 sec.). (2) Cotton, GBT1. (3) Wool, BT1 dull.	**DIANOL BRILLIANT BLUE 6B [Lev].**
582	H_2SO_4...GBS2. NaOH...V.	(1) Compl. dis. (40 sec.). (2) Cotton, GBT1. (3) Wool, BT1→ sl. dull.	**BRILLIANT BENZO BLUE 6B [By].**
583	H_2SO_4...←GB. NaOH...←VS1.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2. (3) Wool, BT1→.	**DIANIL BLUE G [M].** Disazo dyestuff: 2 mol. chromotropic ac. + *dianisidine.*
584	H_2SO_4...(f) B Bkn (L). NaOH...(f) B Bkn (D).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2+ dull. (3) Wool, B Bkn (D).	**DIAMINOGENE EXT. [C].** (Intro. 1895).
585	H_2SO_4...B Bkn (M). NaOH...B Bkn (L).	(1) Compl. dis. (20 sec.). (2) Cotton, V gray (M). (3) Wool, B Bkn (M).	**GLORIA BLACK B [By].**
586	H_2SO_4...Gray (D). NaOH...RV Bkn (M).	(1) Compl. dis. (20 sec.). (2) Cotton, BT2. (3) Wool, gray-blue T2+.	**DIAMINE FAST BLUE FFB [C].** (Intro. 1903).

Appearance (T.2). Solutions (T.3). After-chroming (T.16). Precipitations (T.18a to d). **Usual manner of dyeing.** Trade names of alleged identical or closely allied dyestuffs.	No.
GBS2→ powder; e. s. aq. (opaque, GB and GBT2); alm. i. alc. (BT2); s. conc. H_2SO_4 (BG–GB). — After-chroming: GBS1. — Ppt. tests: H_2SO_4, Cu and Ca, all −; NaOH, − (BV–V, S1 in thin layers); Cr, + compl. — Dyeing: CD.	571
BV Bkn (D) powder; e. s. aq. (opaque, B and BT2); d. s. alc. (BT1 −); s. conc. H_2SO_4 (BG–GB). — After-chroming: B–BG Bkn (M). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: WG; CD.	572
Dark gray powder; e. s. aq. (opaque, BV and VT2); s. alc. (VBT1); s. conc. H_2SO_4 (GB–BG). — After-chroming: alm. unchanged. — Ppt. tests: H_2SO_4, ±; NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	573
BV Bkn (D) powder; e. s. aq. (opaque, B and BT2); alm. i. alc. (BT2); s. conc. H_2SO_4 (BG–GB). — After-chroming; uneven gray. — Ppt. tests: H_2SO_4, + or ±; NaOH (purple), Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	574
BV Bkn (v.D) powder; e. s. aq. (opaque, GB and GBT2); i. alc.; s. conc. H_2SO_4 (GB–BG). — After-chroming: B Bkn (L). — Ppt. tests: H_2SO_4, NaOH (purple in thin layers) and Ca, −; Cr, + compl.; Cu, − or ±. — Dyeing: CD.	575
Black powder; e. s. aq. (VBS2 and VBT2 dull); s. alc. (BV Bkn (D)); s. conc. H_2SO_4 (BG–GB). — After-chroming: N gray (D). — Ppt. tests: H_2SO_4 and Cu, +; NaOH and Ca, −; Cr, + compl. — Dyeing: CD.	576
Brown-black cryst. powder; e. s. aq. (opaque, BV and BVT2); e. s. alc. (opaque, VB and BT2); s. conc. H_2SO_4 (GBS1). — After-chroming: B Bkn (M–D). — Ppt. tests: H_2SO_4, NaOH and Cu, all +; Cr and Ca, + compl. — Dyeing: WA, SA.	577
C. gray (D) powder; e. s. aq. (opaque, VB and VBT2); s. alc. (BS1 and BT2); s. conc. H_2SO_4 (BG–GB). — After-chroming: bluish-black. — Ppt. tests: H_2SO_4, Cr and Cu, + compl.; NaOH, −; Ca −. — Dyeing: CDv. (Test 15, blk on wool and VB Bkn (D) on cotton).	578
(1) Brown- or (2) red-black cryst. powder; e. s. aq. (opaque, B and BT2); (1) d. s. alc. (BT1 −); (2) i. alc.; s. conc. H_2SO_4 (BG–GB).— After-chroming: alm. unchanged. — Ppt. tests: H_2SO_4, − or ±; NaOH, − (red blue); Cr, + compl.; Cu and Ca, −. — Dyeing: CD.	579
D gray to black powder; e. s. aq. (opaque, GBS1 and GBT2); alm. i. alc.; s. conc. H_2SO_4 (GB). — After-chroming: D gray. — Ppt. tests: H_2SO_4, Cr, Cu and Ca, + compl.; NaOH, − (dull red-blue in thin layers). — Dyeing: CD; CDv. w. β-naphthol and m-phenylenediamine. (Wool, blk and cotton unchanged in Test 15).	580
BV Bkn (D) powder; e. s. aq. (opaque, B and BT2); i. alc.; s. conc. H_2SO_4 (←GB). — After-chroming: alm. unchanged. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	581
Blue-black powder; e. s. aq. (opaque, B and BT2); alm. i. alc.; s. conc. H_2SO_4 (BG–GB). — After-chroming: alm. unchanged. — Ppt. tests: H_2SO_4, Cu and Ca, all −; NaOH, − (red-blue in thin layers); Cr, + compl. — Dyeing: CD.	582
BV Bkn (D) powder; e. s. aq. (opaque, B and BT2→); i. alc.; s. conc. H_2SO_4 (BG–GB). — After-chroming: ←B Bkn (M). — Ppt. tests: H_2SO_4, NaOH, (red-blue), Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	583
Black powder; e. s. aq. (opaque, B→ and BT2→); alm. i. alc. (BT1); s. conc. H_2SO_4 (BS1). — After-chroming: W gray (D). — Ppt. tests: H_2SO_4, + compl.; NaOH (turbid V), Cu and Ca, all −; Cr, +. — Dyeing: CDv. w. β-naphthol, etc. (No color change in Test 20).	584
Dark gray powder; e. s. aq. (opaque, V and RVT2); s. alc. (←BS1 and BT2); s. conc. H_2SO_4 (BV). — After-chroming: G gray (L). — Ppt. tests: H_2SO_4, +; NaOH and Ca, −; Cr, + compl.; Cu, ±. — Dyeing: WSA.	585
Red-black cryst. powder; e. s. aq. (opaque, B and BT2); d. s. alc. (BT2→); s. conc. H_2SO_4 (B–BG Bkn (M)). — After-chroming: blue-gray (D). — Ppt. tests: H_2SO_4, NaOH, Cr and Ca, all + compl.; Cu, −. — Dyeing: CD.	586

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-BLUE
587	H_2SO_4...BGS1. NaOH...GBS1.	(1) Compl. dis. (15 sec.). (2) Cotton, BV Bkn (L). (3) Wool, ←VB Bkn (M+).	**ALIZARINE BLUE GNX [Lev].**
588	H_2SO_4...BGS1. NaOH...B—→.	(1) Compl. dis. (50 sec.). (2) Cotton, GBT2. (3) Wool, VB Bkn (M).	**CHICAGO BLUE B [A].** Disazo dyestuff: 2 mol. 1-aminonaphthol(8)-sulphonic ac.(4), ($N_2 = 7$) + *dianisidine*. — (1893).
589	H_2SO_4...BGS2. NaOH...V Bkn (D).	(1) Compl. dis. (40 sec.). (2) Cotton, ←BT1—. (3) Wool, VBS1.	**BRILLIANT FAST BLUE 2G [By].** (Intro. 1907).
590	H_2SO_4...BG Bkn (D). NaOH...C gray (D).	(1) Compl. dis. (1 min.). (2) Cotton, BT2→ dull. (3) Wool, VB Bkn (M–D).	**DIAZO INDIGO BLUE RR EXT. [By].**
591	H_2SO_4...BG. NaOH...C gray (v.D).	(1) Compl. dis. (1 min.). (2) Cotton, BT2. (3) Wool, VB Bkn (M–D).	**COLUMBIA FAST BLUE GG [A].** (Intro. 1895).
592	H_2SO_4...(f) ←GBS1. NaOH...(f) V.	(1) Compl. dis. (1 min.). (2) Cotton, BT2. (3) Wool, VBS1.	**DIAMINE BLUE RW [C].**
593	H_2SO_4...←GB dull. NaOH...V Bkn (M).	(1) Compl. dis. (40 sec.). (2) Cotton, BT2. (3) Wool, VBT2 dull→.	**COLUMBIA BLUE G [A].** Disazo dyestuff : 1-aminonaphthol (8)-sulphonic ac.(4) + *tolidine* + a second sulphonic ac. — (1894).
594	H_2SO_4...GBS1. NaOH...V Bkn (M–D).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2. (3) Wool, VBT1→ dull.	**OXAMINE BLUE BG [B].**
595	H_2SO_4...B Bkn (D). NaOH...V→.	(1) Compl. dis. (15 sec.). (2) Cotton, GBT1. (3) Wool, VBT1.	**CHLORAZOL BLUE CB [H].**
	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [—]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).		
			SECTION OF BLUE-VIOLET
596	Aft-chr. [+] W gray (M). H_2SO_4...←BGS1. NaOH...VBS2.	(1) Alm. compl. (1 min.). (2) Cotton, B Bkn (L). (3) Wool, BV Bkn (M); black.	**SULPHONE BLACK G [By].** Azo dyestuff: possibly w. aniline, Cleve's α-naphthylaminesulphonic acids, and a 1, 8-dioxynaphthalenemonosulphonic ac. as components. — (1895).
597	Aft-chr. [+] YO Bkn (L). H_2SO_4...BGS2. NaOH...VBS2.	(1) Compl. dis. (1 min.). (2) Cotton, BV Bkn (L). (3) Wool, BV Bkn (M).	**NAPHTHYL BLUE BLACK N [C].**
598	Aft-chr. [+] G Bkn (L). H_2SO_4...BG sl. dull. NaOH...VT1.	(1) Compl. dis. (15 sec.). (2) Cotton, GBT2. (3) Wool, BVT1; black.	**WOOL BLACK 6B [A].** Disazo dyestuff: *sulphanilic ac.* + 1-aminonaphthol(8)-sulphonic ac.(4), (N_2 : N_2 = 2 : 7) + *α-naphthylamine*. — (1891).

Appearance (T.2). Solutions (T.3). After-chroming (T.16). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark brown sl. lustrous powder; e. s. aq. (opaque, BV and BVT2); s. alc. (opaque, B and BT2); s. conc. H_2SO_4 (GB dull). — After-chroming: gray (D) uneven. — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH, −; Cu, ±. — Dyeing: WCh.	**587**
Dark gray to black powder; e. s. aq. (opaque, B and BT2); i. alc.; s. conc. H_2SO_4 (BG–GB). — After-chroming: gray (D) uneven. — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Cu, −; Ca, ±. — Dyeing: CD.	**588**
Dark gray to black powder; e. s. aq. (opaque, B and BT2); v. sl. s. alc. (BT2); s. conc. H_2SO_4 (BGS1 dull). — After-chroming: gray (D) uneven. — Ppt. tests: H_2SO_4, − or ±; NaOH, −; Cr, + compl.; Cu and Ca, ±. — Dyeing: CD.	**589**
Dark brown to black powder; e. s. aq. (opaque, BV and VT2); i. alc.; s. conc. H_2SO_4 (C gray (L)). — After-chroming: gray (D) uneven. — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all + compl. — Dyeing: CDv. w. β-naphthol. (Test 15, −).	**590**
Black powder; e. s. aq. (opaque, B and BT2); d. s. alc. (VT2); s. conc. H_2SO_4 (BG→). — After-chroming: V Bkn (D). — Ppt. tests: H_2SO_4, ±; NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: CD.	**591**
Blue-gray cryst. powder; e. s. aq. (opaque, BV and BVT2); d. s. alc. (BT1); s. conc. H_2SO_4 (←GB). — After-chroming: unchanged.— Ppt. tests: H_2SO_4, Cu and Ca, all −; NaOH, ±; Cr, + compl. — Dyeing: CD.	**592**
Blue-black powder; e. s. aq. (opaque, BV and BVT2); alm. i. alc.; s. conc. H_2SO_4 (GB–B). — After-chroming: W gray (D). — Ppt. tests: H_2SO_4, NaOH and Ca, all −; Cr, + compl.; Cu, ±. — Dyeing: CD.	**593**
Dark blue-gray powder; e. s. aq. (opaque, BV and VT2); alm. i. alc. (BT1–BT2); s. conc. H_2SO_4 (GB–B). — After-chroming: violet gray. — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, −; Cu, + or ±. — Dyeing: CD.	**594**
BV Bkn (L) powder; e. s. aq. (opaque, B and GBT2); sl. s. alc. (BT2); s. conc. H_2SO_4 (BG–GB). — After-chroming: VB Bkn (M). — Ppt. tests: H_2SO_4, NaOH (BVS1→ in thin layers) and Ca, all −; Cr, + compl.; Cu, − or ±. — Dyeing: CD.	**595**
COLORS ON WOOL.	
Black powder; e. s. aq. (V); s. alc. (VBS1); s. conc. H_2SO_4 (GB–BG, S1). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, + compl.; NaOH, +. — Dyeing: WA.	**596**
Black powder; e. s. aq. (VBS1); s. alc. (VBS2); s. conc. H_2SO_4 (BS1→). — Ppt. tests: H_2SO_4 and NaOH, +; Cr, + compl.; Cu and Ca, ±. — Dyeing: WA.	**597**
Brown-black powder; e. s. aq. (opaque, BS2 and BT2); d. s. alc. (B); s. conc. H_2SO_4 (GBS1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (bluer) and Cu, −; Ca, +. — Allied brands: Palatine Black [B]; Wool Black [A]. — Dyeing; WGS.	**598**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
599	Aft-chr. [+] G Bkn (L). H_2SO_4...BS2→. NaOH...BVS2.	(1) Compl. dis. (1 min.). (2) Cotton, GBT2. (3) Wool BV Bkn (M); blue-blk.	**WOOL BLACK 4BF [A].**
600	Aft-chr. [+] OYS3. H_2SO_4...C gray (D). NaOH...BVS1.	(1) Compl. dis. (1 min.). (2) Cotton, BV Bkn (L). (3) Wool, BV Bkn (L–M); blue-blk.	**PHENYL BLUE BLACK N [By].** (Intro. 1901).
601	Aft-chr. [−] (BV Bkn (D)–gray). H_2SO_4...G Bkn (D). NaOH...←BVS1.	(1) Compl. dis. (25 sec.). (2) Cotton, VT2. (3) Wool, BV dull.	**ALIZARINE BLUE 2RNX [Lev].**
602	Aft-chr. [−] (N gray (L)). H_2SO_4...G Bkn (M–D). NaOH...BV Bkn (M).	(1) Compl. dis. (15 sec.). (2) Cotton, BV Bkn (M). (3) Wool, BVT1 dull.	**UNION NAVY BLUE B [H].**
603	Aft-chr. [−] (N gray (D)). H_2SO_4...BG→. NaOH...VRT1 dull.	(1) Compl. dis. (35 sec.). (2) Cotton, BT2. (3) Wool, ← BVT1 dull.	**OXAMINE BLUE B [B].** Disazo dyestuff: 1-aminonaphthol(5)-sulphonic ac.(7), ($N_2 = 6$) + *dianisdine* + naphthol(1)-sulphonic ac. (3), ($N_2 = 2$). — (1893).
604	Aft-chr. [−]. H_2SO_4...BGS2. NaOH...V.	(1) Compl. dis. (50 sec.). (2) BT1 sl. dull. (3) Wool, BV sl. dull.	**DIAMINE BENGAL BLUE G [C].**
605	Aft-chr. [−] (blue-gray (M)). H_2SO_4...BG→ dull. NaOH...RVT1.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2+. (3) Wool, BVT1.	**CHICAGO BLUE RW [A].** Disazo dyestuff: 1-aminonaphthol(8)-disulphonic ac.(2,4), ($N_2 = 7$) + *dianisdine* + X. — (1894).
606	Aft-chr. [−] (B and N gray). H_2SO_4...BGS1. NaOH...RV.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2. (3) Wool, BVT1.	**BENZO CYANINE 3B [By].** (Intro. 1893).
607	Aft-chr. [−] (uneven, W and V gray). H_2SO_4...GB–BG dull. NaOH...RV Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2−. (3) Wool, BVT1.	**DIAMINE BLUE BB [C].** Disazo dyestuff: *Benzidine* + 2 mol. 1-aminonaphthol(8)-disulphonic ac.(3,6), ($N_2 = 7$). — (1890).
608	Aft-chr. [−] (RV gray (M)). H_2SO_4...BG Bkn (D). NaOH...RV Bkn (M).	(1) Compl. dis. (40 sec.). (2) Cotton, BT2. (3) Wool, BVT1→dull.	**DIAMINE DARK BLUE B [C].**
609	Aft-chr. [−] (BV Bkn (v.D)). H_2SO_4...BGS1→. NaOH...RVS1.	(1) YOT3 dis. (2) Cotton, B Bkn (D). (3) Wool, BV Bkn (M).	**FORMIC BLUE B [G].**
610	Aft-chr. [−]. H_2SO_4...BGS1. NaOH...(f) RVS1.	(1) Compl. dis. (1 min.). (2) Cotton, VBT2. (3) Wool, BV→.	**BENZO FAST BLUE 5R [By].**
611	Aft-chr. [−]. H_2SO_4...GBS2. NaOH...VRT1.	(1) Compl. dis. (25 sec.). (2) Cotton, BT2. (3) Wool, ←BVT1+.	**TITAN BLUE BBB [H].**
612	Aft-chr. [−]. H_2SO_4...←GBS1. NaOH...←VR dull.	(1) Compl. dis. (25 sec.). (2) Cotton, BT1–2 dull. (3) Wool, BVT1 dull; black.	**BENZO CHROME NAVY BLUE WR [By].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Very dark brown powder; e. s. aq. (BS1); s. alc. (GBS1→); s. conc. H_2SO_4 (BS2→). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, –; Cu, ±; Ca, +. — Dyeing: WGS.	**599**
Black powder; e. s. aq. (VBS1); s. alc. (VBS1→); s. conc. H_2SO_4 (BS2). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all ±. — Dyeing: WGS.	**600**
Greenish-black powder; e. s. aq. (opaque, V and RVT2); e. s. alc. (opaque, VB and BT2–VBT2); s. conc. H_2SO_4 (GBS1→). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, ±. — Dyeing: WCh.	**601**
Brown-black powder; s. aq. (opaque, RV and RVT2); s. alc. (BVS2 bril. and BT2–BVT2); s. conc. H_2SO_4 (BG–GB, S1). — Ppt. tests: H_2SO_4, +; NaOH, Cu, Ca, ±; Cr, + compl. — Dyeing: CWD.	**602**
BV Bkn (D)-black powder; e. s. aq. (B); sl. s. alc. (VBT1); s. conc. H_2SO_4 (←GB). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, + (V→); Ca, +. — Dyeing: CD.	**603**
Grayish-black powder; e. s. aq. (opaque, VB→ and BVT2); s. alc. (BV); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, –; Cu and Ca, ±. — Dyeing: CD.	**604**
Black powder; e. s. aq. (VB); sl. s. alc. (←VB); s. conc. H_2SO_4 (←GB). — Ppt. tests: H_2SO_4 and NaOH, –; Cr, + compl.; Cu and Ca, ±. — Dyeing: CD.	**605**
Dark blue-gray powder; e. s. aq. (opaque, VB and VBT2); sl. s. alc. (BVT2); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**606**
Blue-gray powder; e. s. aq. (opaque, BV–V and BVT2); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, NaOH (RVS1 bril.), Cu and Ca, all –; Cr, + compl. — Allied brands: Benzo Blue BB [By]; Congo Blue 2BX [A] [Lev]. — Dyeing: CD.	**607**
C gray (v.D) powder; e. s. aq. (opaque, BS1 dull and BT2→); alm. i. alc. (VT2); s. conc. H_2SO_4 (VB–BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (redder), Cu and Ca, all –. — Dyeing: CD.	**608**
Black powder; e. s. aq. (←BV); s. alc. (V–BV, S1); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD w. formic aldehyde after treatment.	**609**
Green-black sl. cryst. powder; e. s. aq. (opaque, V–RV and VT2); alm. i. alc. (VT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**610**
Black powder; e. s. aq. (VB); i. alc.; s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, NaOH (R–VR) and Cu, all –; Cr, + compl.; Ca, ±. — Dyeing: CD.	**611**
Dark blue-gray powder; e. s. aq. (opaque, BV–B and RVT2); d. s. alc. (VT2→); s. conc. H_2SO_4 (GB→). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**612**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
613	Aft-chr. [−]. H_2SO_4...GB–BG, S1. NaOH...VR sl. dull.	(1) Compl. dis. (15 sec.). (2) Cotton, BT1 sl. dull. (3) Wool, BV→.	**ACETYLENE BLUE 3B [I].**
614	Aft-chr. [−] (BV Bkn (M)). H_2SO_4...(f) GB. NaOH...V.	(1) Compl. dis. (40 sec.). (2) Cotton, BT2+. (3) Wool, BV dull.	**NAPHTHAMINE BLUE 2B [K].**
615	Aft-chr. [−]. H_2SO_4...GBS1. NaOH...V.	(1) Compl. dis. (1 min.). (2) Cotton, BT1–2. (3) Wool, BVT1 dull.	**CHLORAZOL BLUE B [H].**
616	Aft-chr. [−] (BV Bkn (M–D)). H_2SO_4...(f) GBT1. NaOH...VS1.	(1) Compl. dis. (30 sec.). (2) Cotton, GBT1. (3) Wool, BVS1.	**DIRECT SKY BLUE Conc. [SS].**
617	Aft-chr. [−]. H_2SO_4...(f) ←GB. NaOH...VS1.	(1) Compl. dis. (30 sec.). (2) Cotton, ←BT1 sl. dull. (3) Wool, VS1.	**PARA BLUE G [By].**
618	Aft-chr. [−] (RV Bkn (D)). H_2SO_4...GBS2→. NaOH...RV Bkn (D).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2. (3) Wool, BV Bkn (M)→.	**TITAN NAVY B [H].**
619	Aft-chr. [−] (VR Bkn (D)). H_2SO_4...BS1. NaOH...RVS1.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2→ dull. (3) Wool, BV Bkn (M)→.	(1) **DIANOL BLUE BH [Lev].** (2) **CHLORAMINE BLACK BH [S].**
620	Aft-chr. [−] (N or C gray (D)). H_2SO_4...N–W gray (D). NaOH...BVS1.	(1) Compl. dis.; air ret. (YT2); pers. ret. (OYT2). (2) Cotton, BV Bkn (L). (3) Wool, BV Bkn (L–M); bluish black.	**SULPHONE CYANINE BLACK 2B [By].** (Intro. 1902).
621	Aft-chr. [−] (uneven gray). H_2SO_4...gray (M), uneven. NaOH...VBS1.	(1) Compl. dis. (30 sec.). (2) Cotton, BT1–2. (3) Wool, BV Bkn (M)→.	**BENZO FAST BLUE BN [By].** (Intro. 1900).
			SECTION OF VIOLET
622	Aft-chr. [+] (GBS1). H_2SO_4...VR. NaOH...(f) BV Bkn (L).	(1) Compl. dis. (30 sec.). (2) Cotton, RVT1–2. (3) Wool, V→.	**ACID CHROME BLUE B [By].**
623	Aft-chr. [+] (GY Bkn (L)). H_2SO_4...GT2+; (cot. GBT1). NaOH...white; cot. BT2.	(1) Compl. dis. (3 sec.). (2) Cotton, BT2. (3) Wool, VT3.	**EBOLI BLUE 3B [L].**
624	Aft-chr. [+] (W gray (D)). H_2SO_4...G Bkn (M). NaOH...GBT1+.	(1) Compl. dis. (15 sec.). (2) Cotton, VB Bkn (M). (3) Wool, VT1–2.	**NAPHTOGENE BLUE B [A].**
625	Aft-chr. [+] G gray (L). H_2SO_4...BG Bkn (D). NaOH...B Bkn (D).	(1) Compl. dis. (35 sec.). (2) Cotton, BT2. (3) Wool, V Bkn (M).	**DIAMINE FAST BLUE FFG [C].** (Intro. 1903).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark blue-gray powder; e. s. aq. (opaque, VB and VT2→); sl. s. alc. (B–VB); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, NaOH, (VR in thin layers) and Ca, all –; Cr, + compl.; Cu, ± or –. — Dyeing: CD.	**613**
Black powder w. sl. brassy lustre; e. s. aq. (BV); i. alc.; s. conc. H_2SO_4 (B–GB). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**614**
BS2+ powder; e. s. aq. (opaque, BVS1 and VBT2); sl. s. alc. (pale gray-blue); s. conc. H_2SO_4 (GB→). — Ppt. tests: H_2SO_4, NaOH, Cu (redder) and Ca, all –; Cr, + compl. — Dyeing: CD.	**615**
Black powder; e. s. aq. (opaque, B and BT2); sl. s. alc. (BT2+ dull); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, compl. — Dyeing: CD.	**616**
BV Bkn (v.D) powder; e. s. aq. (VB); s. alc. (VB); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, –. — Dyeing: CDv. (w. diazotised p-nitraniline).	**617**
Brown-black powder; e. s. aq. (opaque, BV and RVT2); d. s. alc. (←VT2); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, NaOH (VR in thin layers), Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**618**
W. gray (v.D) — black powder; e. s. aq. (opaque, BV→ and VT2); i. alc. s. conc. H_2SO_4 (GB →). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (redder), Cu and Ca, all –. — Dyeing: CD.	**619**
Black powder; e. s. aq. (VBS1 dull); s. alc. (←VB); s. conc. H_2SO_4 (BV Bkn (D)). — Ppt. tests: H_2SO_4, ± (BGS1→); NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WGA.	**620**
V. dark brown to black powder; e. s. aq. (opaque, VB and BT2→); sl. s. alc. (BVT1 dull and BVT2→); s. conc. H_2SO_4 (←GB dull). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, –. — Dyeing: CD.	**621**
COLORS ON WOOL.	
Greenish-black powder; e. s. aq. (opaque, RV and RVT2→); s. alc. (R); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – or ±. — Dyeing: WGSCh.	**622**
Gray blue-violet powder; e. s. aq. (opaque, VB and BT2); sl. s. alc. (BVT2–); s. conc. H_2SO_4 (←BG). — Ppt. tests: H_2SO_4, NaOH and Cu, all –; Cr, + compl.; Ca, +. — Dyeing: CD.	**623**
V. dark gray powder; e. s. aq. (opaque, RV and RVT2); s. alc. (BV and BVT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH (deep blue dull in thin layers) and Ca (VRS1–RS1 in thin layers), both –. — Dyeing: CD; CDv. (β-naphthol).	**624**
Black powder; e. s. aq. (B); i. alc.; s. conc. H_2SO_4 (BGS1→). — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu and Ca, ±. — Dyeing: CD.	**625**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
626	Aft-chr. [+] (G gray(L)). H_2SO_4...BGS1. NaOH...BV Bkn (L).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2–1 dull. (3) Wool, V Bkn (L)–V gray.	**DIAMINE NEW BLUE G [C].** (Intro. 1895).
627	Aft-chr. [+] (YO Bkn (L)). H_2SO_4...BG Bkn (D). NaOH...BV Bkn (M).	(1) Compl. dis. (1 min.). (2) Cotton, V Bkn (L–). (3) Wool, V Bkn (M).	**ALIZARINE BLACK D [C].**
628	Aft-chr. [+] (W gray (M) uneven). H_2SO_4...BG→ Bkn. NaOH...V Bkn (M).	(1) Compl. dis. (25 sec.). (2) Cotton, BT2. (3) Wool, V Bkn (M).	**DIAZINE BLUE 2B [K].** (Intro. 1894).
629	Aft-chr. [+] (W gray (D)). H_2SO_4...BGS1. NaOH...V gray (M).	(1) Compl. dis. (25 sec.). (2) Cotton, B Bkn (M). (3) Wool, V Bkn (M).	**CARBIDE BLACK S [I].**
630	Aft-chr. [+] (dark reddish gray). H_2SO_4...BG Bkn (D). NaOH...V Bkn (D).	(1) Compl. dis. (35 sec.). (2) Cotton, BVT1 dull. (3) Wool, V Bkn (M).	**DIAMINOGENE BLUE NA [C].** (Intro. 1903).
631	Aft-chr. [+] (W gray (M) uneven). H_2SO_4...BG→ Bkn (M). NaOH...RV Bkn (M).	(1) Compl. dis. (1 min.). (2) Cotton, BT1 dull. (3) Wool, V Bkn (M); RVS3.	**DIAZO BLACK B [By].** (Intro. 1892).
632	Aft-chr.[+](W gray(M)). H_2SO_4...←B. NaOH...←R Bkn (L).	(1) Compl. dis. (20 sec.). (2) Cotton, BT2 dull. (3) Wool, VT2+.	**DIAMINERAL BLUE R [C].**
633	Aft-chr. [+] (YG gray). H_2SO_4...B Bkn (D). NaOH...←R Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2 dull. (3) Wool, V Bkn (M).	**BENZO CHROME BLACK N [By].** (Intro. 1895).
635	Aft-chr. [+](W gray(M)). H_2SO_4...←B Bkn (M+). NaOH...RV Bkn (M).	(1) Compl. dis. (20 sec.). (2) Cotton, VB Bkn (M). (3) Wool, V Bkn (M), grayish; BV Bkn (v.D).	**DIRECT BLACK RC [By].**
636	Aft-chr. [+] (YG gray). H_2SO_4...←BVS1 dull. NaOH...BV Bkn (M).	(1) Compl. dis. (25 sec.). (2) Cotton, VRT1 sl. Bkn→. (3) Wool, V Bkn (M)– gray; blk.	**PALATINE CHROME BLACK F [B].**
637	Aft-chr. [−]. H_2SO_4...BG–GB. NaOH...RVS1.	(1) Compl. dis. (2) Cotton, BT1. (3) Wool, V.	**TRIAZOL PURE BLUE R [O].**
638	Aft-chr. [−] (C gray (M)). H_2SO_4...BG–G, S1. NaOH...C gray (D)	(1) Compl. dis. (30 sec.). (2) Cotton, BV Bkn (L). (3) Wool, V Bkn (M+); blk.	(1) **DIAMINE FAST GRAY RN [C].** (2) **NEUTRAL GRAY G [A].** ((2) Intro. 1894).
639	Aft-chr. [−]. H_2SO_4...←GBS1. NaOH...VR.	(1) Compl. dis. (50 sec.). (2) Cotton, BT2→. (3) Wool, V–.	**DIAMINERAL BLUE CV [C].**
640	Aft-chr. [−]. H_2SO_4...GB–B, S1. NaOH...R–VR.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2–1. (3) Wool, V→.	**BENZO AZURINE G [A].** Disazo dyestuff: *dianisdine* + 2 mol. naphthol(1)-sulphonic ac.(4), (N_2 = 2). — (Intro. 1885).
641	Aft-chr. [−]. H_2SO_4...(f) GB–B, S1. NaOH...R–VR, S1.	(1) Compl. dis. (40 sec.). (2) Cotton, BT1 sl. dull. (3) Wool, ←VS1.	**BENZO AZURINE G Conc. [SS].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Black cryst. powder; e. s. aq. (opaque, B + dull, and BT2); sl. s. alc. (BVT2); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, –; Cr, + compl. — Dyeing: CD.	**626**
Brown-black powder; e. s. aq. (opaque, RVS1 and RVT2 dull); s. alc. (V); s. conc. H_2SO_4 (GBS1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: WA.	**627**
Dark gray powder; e. s. aq. (opaque, BS1 and BT2); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, ±; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CT.	**628**
V. dark gray powder; e. s. aq. (opaque, RVS1 and RVT2); sl. s. alc. (violet-gray to cool gray (L)); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, –. — Dyeing: CD.	**629**
Reddish-black cryst. powder; e. s. aq. (opaque, V→ and RVT2); s. alc. (V and VT2); s. conc. H_2SO_4 (G gray — C gray, (L)). — Ppt. tests: H_2SO_4, +; NaOH and Ca, – (VR–R in thin layers); Cr, + compl.; Cu, –. — Dyeing: CDv. w. β-naphthol.	**630**
Gray-black powder; e. s. aq. (BV); sl. s. alc. (RV Bkn (L)); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all ±; Cr, + compl. — Dyeing: CDv. w. β-naphthol or phenylenediamine.	**631**
D. gray to black powder; e. s. aq. (opaque, BS1 and BT2); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, Cu and Ca, all +; NaOH, – (red-blue in thin layers); Cr, + compl. — Dyeing: CD.	**632**
Brown-black cryst. powder; e. s. aq. (opaque, VBS1 and BVT2); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, Cu and Ca, all +; NaOH, – (violet in thin layers); Cr, + compl. — Dyeing: CD, aftertreated w. Cr, Cu.	**633**
Dark violet-gray powder; e. s. aq. (opaque, RV Bkn (D)); sl. s. alc. (VS1 and BVT2→); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, ±; NaOH (RS1-2), Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**635**
Black powder; s. aq. (opaque, RV and VT2); s. alc. (RT1); s.conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4 (VR), Cr, Cu and Ca, all + compl.; NaOH, +. — Dyeing: WGSCh.	**636**
D. blue-gray powder; e. s. aq. (opaque, VB and BVT2); d. s. alc. (VT1); s. conc. H_2SO_4 (BG→). — Ppt. tests: H_2SO_4, +; NaOH (deep red-violet in thin layers), Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**637**
Black powder; alm. i. aq.; s. alc. (VR Bkn (D)); s. conc. H_2SO_4 (BGS1→). — Dyeing: CD.	**638**
Brown cryst. powder; e. s. aq. (opaque, V and RVT2); sl. s. alc. (VR and RVT2); s. conc. H_2SO_4 ←GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (red-violet in thin layers); Cu and Ca, ±. — Dyeing: CD.	**639**
D. blue-gray to black powder; e. s. aq. (opaque, RV→ and RVT2); sl. s. alc. (VR and RV–VR, T2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, Cr and Cu, + compl.; NaOH, – (R); Ca ±. — Allied brands: Benzo Azurine [By] [L] [Lev]. — Dyeing: CD.	**640**
V. dark yel.-brown cryst. powder; e. s. aq. (opaque, VB and BVT2); sl. s. alc. (RVT1-2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – (R+ →bril). — Dyeing: CD, aftertreated w. Cu.	**641**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
642	Aft-chr. [−]. H_2SO_4...(f) GB–B, S1. NaOH...V.	(1) Compl. dis. (50 sec.). (2) Cotton, BT2+. (3) Wool, V.	**DIAMINE BLUE 3B [C].** Disazo dyestuff: *tolidine* + 2 mol. 1-aminonaphthol(8)-disulphonic ac. (3,6), (N_2= 7). — (1890).
643	Aft-chr. [−] (RV Bkn (L)). H_2SO_4...←GBS1. NaOH...RV.	(1) Compl. dis. (1 min.). (2) Cotton, BT1 dull. (3) Wool, VT1→ sl. dull; VS3.	**DIAZO BLACK 3B [By].**
644	Aft-chr. [−]. H_2SO_4...(f) ←GB. NaOH...RVS2.	(1) Compl. dis. (1 min.). (2) Cotton, BT1. (3) Wool, V→.	**BRILLIANT AZURINE R [By].**
645	Aft-chr. [−]. H_2SO_4...GB–B, S1. NaOH...RV–RVS1.	(1) Compl. dis. (30 sec.). (2) Cotton, BT1 sl. dull. (3) Wool, V.	**PARA BLUE R [By].**
646	Aft-chr. [−]. H_2SO_4...GBS2. NaOH...RV.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2+. (3) Wool, VT1.	**DIANIL BLUE 2R [M].**
647	Aft-chr. [−]. H_2SO_4...(f) ←GBS1. NaOH...C gray (v.D).	(1) Compl. dis. (2) Cotton, BT2 sl. dull. (3) Wool, VT1 dull.	**BOSTON BLUE R [A].**
648	Aft-chr. [−] (RV Bkn (M–D)). H_2SO_4...(f) BS1. NaOH...V dull.	(1) Compl. dis. (40 sec.). (2) Cotton, BT1–2. (3) Wool, V.	**CHICAGO BLUE 2R [A].** Disazo dyestuff: 1-aminonaphthol(8)-sulphonic ac.(4) + *tolidine* + a second sulphonated component. — (1894).
649	Aft-chr. [−] (V Bkn (M)). H_2SO_4...(f) ←BT1 dull. NaOH...VS1.	(1) Compl. dis. (1 min.). (2) Cotton, GBT2→. (3) Wool, ←V sl. dull.	**DIRECT INDIGO BLUE A [I].** Trisazo dyestuff: aminonaphtholdisulphonic ac. + (*m-amino-p-cresolmethylether* + *benzidine*) + aminonaphtholdisulphonic ac.
650	Aft-chr. [−] (RV Bkn (D)→). H_2SO_4 ...←BT1 dull. NaOH...VS1→.	(1) Compl. dis. (40 sec.). (2) Cotton, BT2+ dull. (3) Wool, VT1.	**DIRECT INDIGO BLUE BN [I].** Disazo dyestuff: dioxynaphthoic ac. + *benzidine* + aminonaphtholdisulphonic acid.
651	H_2SO_4...←BT1 dull. NaOH...RV Bkn (M).	(1) Compl. dis. (20 sec.). (2) Cotton, B Bkn (D)→. (3) Wool, V Bkn (M)→.	**DIAZO BLACK BHN EXT. [By].** (Intro. 1897).
652	Aft-chr. [−] (RV Bkn (D)). H_2SO_4...BS2. NaOH...(f) RVS1.	(1) Compl. dis. (50 sec.). (2) Cotton, BT2+ dull. (3) Wool, V Bkn (v.D).	**DIAMINE BLACK BO [C].** Disazo dyestuff: salicylic ac.(OH : N_2= 4 : 1) + *benzidine or ethoxybenzidine* + phenetol,(N_2 : OEt = 1 : 4). — (1889).
653	Aft-chr. [−] (VR Bkn (D)). H_2SO_4...BS2. NaOH...RV→ Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, BT2 dull. (3) Wool, V–RV Bkn (D)+.	**DIPHENYL BLUE BLACK BD [G].**
654	Aft-chr. [−] (RV Bkn (D)). H_2SO_4...BS2. NaOH...RV Bkn (D).	(1) Compl. dis. (35 sec.). (2) Cotton, BT2→. (3) Wool, V Bkn (D)→.	**DIAMINE BLUE BLACK E [C].** Disazo dyestuff: naphthol(2)-disulphonic ac (3,7), (N_2 = 1) + *ethoxybenzidine* + 2-aminonaphthol(8)-sulphonic ac. 6), (N_2=7).—(1889).
655	Aft-chr. [−] (VR Bkn (D)). H_2SO_4...BS2 dull. NaOH...C gray (v.D).	(1) Compl. dis. (30 sec.). (2) Cotton, VB Bkn (D). (3) Wool, V Bkn (v.D); VR gray (L).	**PLUTO BLACK A EXT. [By].** (Intro. 1902).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Blue-black powder; e. s. aq. (opaque, VB and BT2–VBT2); i. alc.; s. conc. H_2SO_4 (GB) – Ppt. tests: H_2SO_4, – or ±; NaOH, Cu and Ca, –; Cr, + compl. – Allied brands: Benzo Blue 3B (By); Congo Blue 3B (A) (Lev). — Dyeing: CD.	**642**
Brown-black powder; e. s. aq. (opaque, V and VT2); sl. s. alc. (VR); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4, +; NaOH and Ca, –; Cr, + compl.; Cu, ±. — Dyeing: CD.	**643**
C gray (v.D) powder; e. s. aq. (opaque, BV and ←VT2); e. s. alc. (RV→ and RVT2); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, ±; Cu, +. — Dyeing: CD.	**644**
B. blue-gray powder; e. s. aq. (opaque, BV and BVT2); sl. s. alc. (BVT1–2); s. conc. H_2SO_4 (GB→). — Ppt. tests: H_2SO_4, Cu and Ca, +; Cr, + compl.; NaOH, – (VR in thin layers). — Dyeing: CDv. w. diazotized p-nitraniline.	**645**
V. dark gray powder; e. s. aq. (opaque, BV and VT2); sl. s. alc. (RVT2); s. conc. H_2SO_4 (GB). — — Ppt. tests: H_2SO_4, NaOH (VR–R in thin layers), Cu and Ca, all –; Cr, + compl. — [Dianil Blue G, an allied brand, is said to be a disazo dyestuff: (*dianisdine* + 2 mol. chromotropic ac.)] — Dyeing: CD.	**646**
Reddish-black powder; e. s. aq. (opaque, VB and BVT2); sl. s. alc. (RVT1); s. conc. H_2SO_4 (←GB). — Ppt. tests: H_2SO_4, +; NaOH, Ca and Cu (violet), all –; Cr, + compl. — Dyeing: CD.	**647**
Reddish-black powder; e. s. aq. (opaque, V and VT2); s. alc. (opaque, RVS1 bril. and VT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, Cr and Ca, + compl.; NaOH (RV–VR) and Cu, –. — Dyeing: CD.	**648**
D. blue-gray cryst. powder; e. s. aq. (opaque, VBS1 and VBT2); alm. i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all ±; Cr, + compl. — Dyeing: CD.	**649**
Blue-black powder; e. s. aq. (BV); v. sl. s. alc. (VBT2); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD.	**650**
Gray-black powder; e. s. aq. (opaque, ←V and VT2); alm. i. alc.; s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (RV→ in thin layers) and Ca, both –; Cu, ±. — Dyeing: CD; CDv. (p-phenylenediamine).	**651**
D. gray to black powder; e. s. aq. (opaque, VBS1 to blue gray); sl. s. alc. (RV dull); s. conc. H_2SO_4 (←B). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, +; Ca, ±. — Allied brands: Noir Diamine B (MLy). — Dyeing: CD.	**652**
D. blue-gray powder; e. s. aq. (opaque, BV→ and BVT2); alm. i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — [" Diphenyl Blue Black (G)," disc. 1895, is the disazo dyestuff: 1-aminonaphthol(8)-disulphonic ac.(3,6), ($N_2 = 7$) + *benzidine* + 2 mol ethylaminonaphthol(8)-sulphonic ac.(6), ($N_2 = 7$)]. — Dyeing: CD.	**653**
Dark gray-black powder; e. s. aq. (opaque, BV and VT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, +; NaOH, Ca and Cu (RVS1 in thin layers), all –; Cr, + compl. — Dyeing: CD.	**654**
Brown to black cryst. powder; e. s. aq. (opaque, VRS1 and VRT3 dull); i. alc.; s. conc. H_2SO_4 (GBS1→). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, –; Ca, ± or –. — Dyeing: CD.	**655**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
656	Aft-chr. [−] (RV Bkn (D)). H_2SO_4...VB Bkn (D). NaOH...V Bkn (D).	(1) Compl. dis. (40 sec.). (2) Cotton, BT2 dull. (3) Wool, V Bkn (D).	**NAPHTHAMINE FAST BLUE B [K].**
657	Aft-chr. [−] (RV Bkn (M)). H_2SO_4...V Bkn (D). NaOH...RVT1.	(1) Compl. dis. (20 sec.). (2) Cotton, BT2–1. (3) Wool, V–RV, T1.	**ERIE BLUE 2G [A].** (Intro. 1896).
658	Aft-chr. [−] (VR Bkn (D)). H_2SO_4...C gray (D). NaOH...V Bkn (D).	(1) Compl. dis. (90 sec.). (2) Cotton, VT2. (3) Wool, V Bkn (D).	**DIAMINOGENE BLUE 3RN [C].**
			SECTION OF RED-VIOLET
659	Aft-chr. [+] (OY Bkn (v.L)). H_2SO_4...G Bkn (v.L). NaOH...W gray (v.L) −white; (cot. VBT1 dull).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2+ dull→. (3) Wool, RV Bkn (L).	**BENZO BLACK BLUE G [By].** Trisazo dyestuff: 2 mol. naphthol(1)-sulphonic ac.(4), (N_2=2) + *benzidinedisulphonic ac.* — (1887).
660	Aft-chr.[+](W gray (L)). H_2SO_4...BG Bkn (L). NaOH...V→ Bkn (v.L).	(1) Compl. dis. (10 sec.). (2) Cotton, BT1. (3) Wool, RV Bkn (L).	**CONGO FAST BLUE B [By].**
661	Aft-chr. [+] (W gray (M)). H_2SO_4...BG Bkn (M). NaOH...RV Bkn (M).	(1) Compl. dis. (10 sec.). (2) Cotton, VBT2+ dull. (3) Wool, RV Bkn (M); RVS2.	**DIAZO BLACK R [By].**
662	Aft-chr. [+] (OY Bkn (D)). H_2SO_4...(f) GBS1. NaOH...VR Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, V Bkn (M). (3) Wool, RV Bkn (D)→.	**DIANIL BLACK R [M].** Trisazo dyestuff: *naphthionic ac.* + [(N_2=7), 1,8-dihydroxynaphthalenedisulphonic ac.(3,6) + *benzidine* + (N_2 = 6), 1, 3-diaminobenzene]. — (1894).
663	Aft-chr. [+] (W gray (M)). H_2SO_4...(f) ←BS1. NaOH...R Bkn (L)−gray.	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (M). (3) Wool, RV Bkn (M).	**DIRECT GRAY B [I].** Disazodyestuff: 2 mol. 1,7-dihydroxynaphthalenecarbonic(6)-sulphonic ac.(3), (N_2=2) + *tolidine.* —(1891).
664	Aft-chr. [+] (Y Bkn (v.D)). H_2SO_4...(f) BS1. NaOH...RS2.	(1) Compl. dis. (1 min.). (2) Cotton, B Bkn (M)→. (3) Wool, RV Bkn (D).	**BENZO CHROME BLACK B [By].**
665	Aft-chr. [+] (N gray (v.D)). H_2SO_4...(f) GBS1. NaOH...RV Bkn (M).	(1) Alm. compl. dis. (2) Cotton, BT2+ dull. (3) Wool, ←RV Bkn (M).	**CHICAGO BLUE R [A].** Disazo dyestuff: 2 mol. 1-aminonaphthol(8)-sulphonic ac.(4), (N_2= 7) + *o-tolidine.* — (1893).
666	Aft-chr. [+] (C gray (v.D)). H_2SO_4...(f) BS2. NaOH...VRS1.	(1) Compl. dis. (½ min.). (2) Cotton, VBT1 sl. dull. (3) Wool, RV.	**EBOLI BLUE 6R [L].**
667	Aft-chr. [+] (OR Bkn (D)). H_2SO_4...(f) BS1. NaOH...(f) R Bkn (L).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2→ dull. (3) Wool, RVS1.	**DIRECT GRAY R [I].** Disazo dyestuff: 2 mol. of some sulphonated dihydroxynaphthoic ac. + *benzidine.* — (1891).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
D. gray to black powder; e. s. aq. (opaque, BS1 and BT2); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, Cu and Ca, all ±; NaOH, –; Cr, + compl. — Dyeing: CD.	**656**
Blue-black powder; e. s. aq. (opaque, B and BT2); sl. s. alc. (BV and BVT2); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH, – (BVS1 in thin layers); Cu, +. — Dyeing: CD.	**657**
Brown-black cryst. powder; e. s. aq. (opaque, RV and RVT2→); e. s. alc. (RVS1 and RVT2); s. conc. H_2SO_4 (green gray (L)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – (VR–R in thin layers); Cu, – or ±. — Dyeing: CDv.	**658**
COLORS ON WOOL.	
D. blue-gray powder; e. s. aq. (opaque, BV and BVT2); i. alc.; s. conc. H_2SO_4 (C–G, gray (L)). — Ppt. tests: H_2SO_4, ±; NaOH and Ca, –; Cr and Cu, + compl. — Dyeing: CD.	**659**
D. brown to black powder; e. s. aq. (opaque, V and RVT2); sl. s. alc. (RVT2 +); s. conc. H_2SO_4 (BG→). — Ppt. tests: H_2SO_4 and Ca, +; NaOH, –; Cr and Cu, + compl. — ["Congo Fast Blue B (A)," pat. 1890, is a trisazo dyestuff]. — Dyeing: CD.	**660**
Brown-black powder; e. s. aq. (opaque, V and VT2); sl. s. alc. (RVT2); s. conc. H_2SO_4 (GB).— Ppt. tests: H_2SO_4 and Cu, ±; NaOH and Ca, –; Cr, + compl. — Dyeing: CD.	**661**
Black powder; e. s. aq. (violet black, and RV Bkn (M)); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, +; NaOH and Ca, –; Cr and Cu, + compl. — Dyeing: CD.	**662**
V. dark warm gray powder; e. s. aq. (opaque, BV and BVT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, –; Ca, +. — Dyeing: CD.	**663**
V. dark red-brown cryst. powder; e. s. aq. (opaque, VBS1 and VBT2 sl. dull); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Ca, +; NaOH and Cu, ±; Cr, + compl. — Dyeing: CD.	**664**
V. dark blue powder; e. s. aq. (opaque, BV and BVT2); sl. s. alc. (BG–GB, T1 and 2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, ±. — Dyeing: CD.	**665**
D. blue-black powder; e. s. aq. (opaque, RV and RVT2); i. alc.; s. conc. H_2SO_4 (GB–B). — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, + compl.; Cu and Ca, ±. — Dyeing: CD.	**666**
Violet-gray powder; e. s. aq. (opaque, RV and RVT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – (redder). — Dyeing: CD.	**667**

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
668	Aft-chr. [+] (OR Bkn (D)). H_2SO_4...(f) BS1. NaOH...V Bkn (D).	(1) Compl. dis. (30 sec.). (2) Cotton, BV Bkn (L). (3) Wool, RV.	**CHICAGO BLUE 4R [A].** Disazo mixt.: 1-aminonaphthol(8)-sulphonic ac.(4) (or disulphonic ac.(2,4)) + *benzidine* + another naphtholsulphonic ac. — (1894).
669	Aft-chr.[+](W gray (D)). H_2SO_4...C gray (D). NaOH...RV Bkn (D).	(1) Compl. dis. ($\frac{1}{2}$ min.). (2) Cotton, BT1 dull. (3) Wool, RV Bkn (D)→.	**ZAMBESI BLACK F [A].** (Intro. 1895).
670	Aft-chr. [+] (v.D gray). H_2SO_4...G gray (M). NaOH...RV Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, BT1 dull. (3) Wool, RV Bkn (M).	**PHENAMINE BLUE B [B].** (Intro. 1894).
671	Aft-chr. [−] (V Bkn (M) −gray). H_2SO_4...G Bkn (L). NaOH...RVT1.	(1) Compl. dis. (1 min.); air ret. (weak tint.) (2) Cotton, BT1. (3) Wool, ←RV dull.	**BRILLIANT FAST BLUE B pat. [By].** (Intro. 1907.)
672	Aft-chr. [−]. H_2SO_4...(f) BG. NaOH...(f) V bril.	(1) Compl. dis. ($\frac{3}{4}$ min.). (2) Cotton, VT1. (3) Wool, RV→.	**BRILLIANT BENZO VIOLET B [By].**
673	Aft-chr. [−]. H_2SO_4...(f) ←GBS1. NaOH...VR.	(1) Compl. dis. (30 sec.). (2) Cotton, ←BT2+. (3) Wool, ←RV.	**BENZOAZURIN 3G [By].** Disazo dyestuff: *dianisidine* + 2 mol. naphthol(1)-sulphonic ac.(5), (N_2 = 2). — (1885).
674	Aft-chr. [−]. H_2SO_4...(f) GB. NaOH...VRS1.	(1) Compl. dis. (90 sec.). (2) Cotton, VT1. (3) Wool, RV→ dull.	**TRISULPHON BLUE R Conc. [S].**
675	Aft-chr. [−] (←RV Bkn (M–D)). H_2SO_4...GBS1. NaOH...VR.	(1) Compl. dis. (1 min.). (2) Cotton, BT1→. (3) Wool, ←RV sl. dull.	(1) **BENZO COPPER BLUE B [By].** (2) **BENZO COPPER BLUE 2B [By].** (3) **DIAMOND BLUE CVB [C].** ((1) Intro. 1900).
676	Aft-chr. [−] (←RV Bkn (M)). H_2SO_4...(f) GBS2. NaOH...VR sl. dull.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2+. (3) Wool, RV sl. dull.	**DIAMINE BLUE BX [C].** Disazo dyestuff: 1-aminonaphthol(8)-disulphonic ac.(3,6) + *tolidine* + naphthol(1)-sulphonic ac. (4), (N_2 = 2). — (1890).
677	Aft-chr. [−]. H_2SO_4...(f) GB. NaOH...VRS1.	(1) VRT3 dis. (2 min.). (2) Cotton, BT1→ dull. (3) Wool, ←RVS1.	**DIAMINE BENGAL BLUE R [C].**
678	Aft-chr. [−]. H_2SO_4...(f) GBS1. NaOH...VRS2.	(1) Compl. dis. (30 sec.). (2) Cotton, BV Bkn (M–D). (3) Wool, RV Bkn (D).	**DIAZO FAST BLACK B [By].**
679	Aft-chr. [−] (VR Bkn (M)). H_2SO_4...GB–BG dull. NaOH...R Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, BT1 dull. (3) Wool, RV Bkn (M)→.	**ZAMBESI BLUE BX and RX [A].** (Intro. 1895).
680	Aft-chr. [−]. H_2SO_4...(f) GBS1. NaOH...R–VR.	(1) Compl. dis. (1 min.). (2) Cotton, BT1. (3) Wool, RV sl. dull.	**OXYDIAMINE BLUE G [C].**
681	Aft-chr. [−] (RV Bkn (M)). H_2SO_4...GB–BG dull. NaOH...V Bkn (D).	(1) Compl. dis. (2) Cotton, GB→. (3) Wool, RVS1.	**CONGO FAST BLUE B EXT. [A].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
V. dark red-brown powder; e. s. aq. (opaque, RV and RVT2); e. s. alc. (VRS1 and RVT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Cu, – ; Ca, +. — Allied brands: Columbia Blue R [A] — Dyeing: CD.	**668**
Green-black powder; e. s. aq. (opaque, V and VT2); e. s. alc. (opaque, BVS1 and BVT2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, Cr and Cu, all + ; NaOH, – ; Ca, ±. — Dyeing: CDv.	**669**
Red-black cryst. powder; e. s. aq. (opaque, VBS1 and BVT2); sl. s. alc. (VT2); s. conc. H_2SO_4 (BGS2). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, ± ; Cu and Ca, –. — Dyeing: CD.	**670**
V. dark C gray powder; e. s. aq. (opaque, VB and VBT2); e. s. alc. (B→ and BT2); s. conc. H_2SO_4, (GB–GBS1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – ; Cu and Ca, ±. — Dyeing: CD.	**671**
Gray powder; e. s. aq. (bril. ←VR); s. alc. (bril. ←R); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Ca, + ; NaOH and Cr, + compl.; Cu, ±. — Dyeing: CD.	**672**
D. blue-gray powder; e. s. aq. (opaque, V and RVT2); sl. s. alc. (V–RV, T1 and 2); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, + compl.; NaOH, + (VR–R bril.). Allied brands: Benzoazurine 3G [A] [L] [Lev]. — Dyeing: CD.	**673**
V. dark brown cryst. powder; e. s. aq. (opaque, RV and RVT2→); s. alc. (VRT1–2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Ca, – ; NaOH and Cu, – (violet red in thin layers); Cr, + compl. — [Trisulphone Blue RB, and Trisulphone Blue Violet [S] are disazo derivatives of benzidine, tolidine or dianisdine, disc. (1896)]. — Dyeing: CD, afterchromed.	**674**
BV Bkn (D) powder; e. s. aq. (opaque, (1) V and RVT2; (2, 3) BV and VT2); e. s. alc. (opaque, RV and RVT2); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – ; (1, 3) Cu, +, (2) Cu, + (slowly). — Dyeing: CD, aftertreated w. Cr, Cu.	**675**
Violet-gray powder; e. s. aq. (opaque, BV and BVT2); sl. s. alc. (V); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, + ; NaOH, Cu and Ca, – ; Cr, + compl. — Allied brands: Benzo Blue BX [By]; Congo Blue BX [A] [Lev]. — Dyeing: CD.	**676**
D. violet-gray powder; e. s. aq. (opaque, RV and RVT2); s. alc. (RV and RVT2); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – ; Cu and Ca, +. — Dyeing: CD.	**677**
Brown-black cryst. powder; e. s. aq. (opaque, RV and RVT2); s. alc. (R–VR and VRT2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – (redder); Cu, +. — Dyeing: CD.	**678**
Brown-black powder; e. s. aq. (opaque, BV and RVT2); v. sl. s. alc. (RV Bkn (M–L)); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CDv.	**679**
BV Bkn (v.D) powder; e. s. aq. (BV and VT2); s. alc. (RV); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (R) and Ca, – ; Cu, ±. — Dyeing: CD.	**680**
Reddish-black powder; e. s. aq. (opaque, B and BT2); s. alc. (BVT1–2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and NaOH, + ; Cr, + compl.; Cu, ± ; Ca, –. — [" Congo Fast Blue B (A)," disc. 1890, is a trisazo dianisdine derivative.] — Dyeing: CD.	**681**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
682	Aft-chr. [−] (black). H_2SO_4...(f) GBS1→. NaOH...V Bkn (D).	(1) ORT2 dis. (2 min.). (2) Cotton, VBS2 dull. (3) Wool, RV Bkn (M)→; blk.	**AZO BLUE BLACK [O].**
683	Aft-chr. [−]. H_2SO_4...(f) GBS1. NaOH...V Bkn (D) −gray.	(1) Alm. compl. dis. (2) Cotton, BT1→. (3) Wool, RVS1→.	**CONGO FAST BLUE R EXT. [A].]**
684	Aft-chr. [−]. H_2SO_4...(f) ←GBS1. NaOH...(f) V→.	(1) YOT2 dis. (2 min.). (2) Cotton, VB Bkn (D). (3) Wool, RVS2.	**FORMIC BLUE R [G].**
685	Aft-chr. [−]. H_2SO_4...GB Bkn (D). NaOH...RV Bkn (D).	(1) Compl. dis. (15 sec.). (2) Cotton, BV Bkn (L–M). (3) Wool, RV Bkn (M).	**COTTON BLACK 3B [B].** (Intro. 1901).
686	Aft-chr. [−]. H_2SO_4...(f) BS1→. NaOH...VRT1→.	(1) Compl. dis. (30 sec.). (2) Cotton, BT2→ dull. (3) Wool, RV sl. dull.	**DIAMINE BLUE B [C].** Disazo dyestuff: naphthol(2)-disulphonic ac.(3, 7), (N_2 = 1) + *3-ethoxy-benzidine* + naphthol(1)-sulphonic ac.(4), (N_2 = 2). —(1887).
687	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...VR.	(1) Compl. dis. (1 min.). (2) Cotton, VBT2. (3) Wool, RV→ sl. dull.	**OXAMINE BLUE 3R [B].** Disazo dyestuff: 2-amino-naphthol (5)-sulphonic ac.(7), (N_2 = 6) + *o-tolidine* + naphthol (1)-sulphonic ac. (4), (N_2 = 2). — (1893).
688	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...VR Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, BT1→ dull. (3) Wool, RV→ sl. dull.	**DIRECT BLUE BX [SS].**
689	Aft-chr. [−]. H_2SO_4...(f) ←BS1. NaOH...RT1 bril.	(1) Compl. dis. (25 sec.). (2) Cotton, VBT2. (3) Wool, RV→ sl. dull.	**AZO BLUE [A].** Disazo dyestuff: 2 mol. naphthol(1)-sulphonic ac.(4), (N_2 = 2) + *o-tolidine*. — (1885).
690	Aft-chr. [−] (RVS2). H_2SO_4...(f) B Bkn (D). NaOH...(f) V Bkn (D).	(1) Compl. dis. (½ min.). (2) Cotton, BT1 sl. dull. (3) Wool, RVS1; (VRT2, redder in v. light dyeing).	**BENZO FAST BLUE R [By].** (Intro. 1902).
691	Aft-chr. [−] [VR Bkn (L)]. H_2SO_4...B Bkn (M+). NaOH...RV→Bkn (M).	(1) Compl. dis. (20 sec.). (2) Cotton, BT1− dull. (3) Wool, RV Bkn (M).	**DIRECT INDONE BLUE R [S].** Trisazo dyestuff: [α-naphthylamine (N_2 : NH_2 = 4 : 1) + *2- aminonaphthol*(1)-*disulphonic ac.*(3,6), (N_2 : OH = 7 : 1)] + *benzidine* + 1-aminonaphthol(8)-disulphonic ac.(3,6) (N_2 : OH = 7 : 8). — (1896).
692	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...RVS1.	(1) Compl. dis. (2) Cotton, GB–B, T1 dull. (3) Wool, RV Bkn (M–D).	**DIRECT INDIGO BLUE BK [I].** Trisazo dyestuff: (*1-mol. m-amino-p-cresolmethylether* + *benzidine*) + 1-aminonaphthol(8)-disulphonic ac. (3,6) + aminonaphtholsulphonic ac.
693	Aft-chr. [−] [RV Bkn (v.D)]. H_2SO_4...(f) BS2. NaOH...RVS1.	(1) Compl. dis. (40 sec.). (2) Cotton, VT2. (3) Wool, RVS1.	**NAPHTHOGEN BLUE 6R [A].**
694	Aft-chr. [−] [VR Bkn (L)]. H_2SO_4...C gray–B Bkn (M). NaOH...VRT2 dull.	(1) Compl. dis. (15 sec.). (2) Cotton, BT2→. (3) Wool, RVT1−, sl. dull.	**DIAMINE NEW BLUE R [C].** (Intro. 1895).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
D. red-gray to black powder; e. s. aq. (opaque, V and VT2); sl. s. alc. (RVT1–2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**682**
D. red-brown cryst. powder; e. s. aq. (opaque, BV→ and VT2); s. alc. (RV→ and RVT2); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all + compl.; Cu, – or ±. — ["Congo Fast Blue R," disc. 1890, is a tolidine trisazo dyestuff]. — Dyeing: CD.	**683**
Iron-gray powder; e. s. aq. (RV); v. d. s. alc. (RVT1→); s. conc. H_2SO_4 (BGT1→). — Ppt. tests: H_2SO_4, + or ±; NaOH and Cu, –; Cr, +; Ca, + compl. — Dyeing: CD w. formic aldehyde aftertreatment.	**684**
Black powder; e. s. aq. (VB Bkn); i. alc.; s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, –; Cu and Ca, +. — Dyeing: CD.	**685**
V. dark red-brown cryst. powder; e. s. aq. (opaque, B and BT2→); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (VR–R in thin layers), Cu and Ca, –. — Dyeing: CD.	**686**
V. dark W. gray cryst. powder; e. s. aq. (opaque, RV and RVT2); s. alc. (RV and VRT1–2); s. conc. H_2SO_4 (GB→). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, ±. — Dyeing: CD.	**687**
Black powder; e. s. aq. (opaque, BV→ bril. and BVT2→); sl. s. alc. (V); s. conc. H_2SO_4 (GB→). — Ppt. tests: H_2SO_4 and Ca, ±; NaOH (VR in thin layers) and Cu, –; Cr, + compl. — Dyeing: CD.	**688**
Black powder; e. s. aq. (V and VT2); s. alc. (VR); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, NaOH (R), Cr and Ca, +; Cu, ±. — Allied brands: Azo Blue [By] [L] [Lev]. — Dyeing: CD.	**689**
Green-black cryst. powder; e. s. aq. (opaque, RV and RVT2); s. alc. (opaque, VRS1 and VRT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all ±; Cr, + compl. — Dyeing: CD.	**690**
Violet-gray (M) powder; e. s. aq. (opaque, BV→ and VT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**691**
Gray-black powder; e. s. aq. (opaque, BV dull and BVT2 dull); alm. i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**692**
Gray-black powder; e. s. aq. (opaque, VR and VRT2); alm. i. alc.; s. conc. H_2SO_4 (BV Bkn (L)). — Ppt. tests: H_2SO_4, Cu and Ca, all –; NaOH, – (O–YO, S1); Cr, + compl. — Dyeing: CDv.	**693**
Black powder; e. s. aq. (VB and VBT2); s. alc. (V); s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4, NaOH and Ca, all +; Cr and Cu, + compl. — Dyeing: CD.	**694**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) Wool color in Test 5. (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Aft.-chroming change (T.16).	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF GRAY
695	H_2SO_4...YO Bkn (D). Wool, V. gray (D). NaOH...R Bkn (D–M).	(1) Compl. dis. (1 min.). (2) Cotton, B Bkn (L). (3) Aft-chr., YO Bkn (D).	**PLUTO BLACK CR [By].** (Intro. 1900).
696	H_2SO_4...(f) YG Bkn (L). Wool, C gray (L). NaOH...B Bkn (M+).	(1) Compl. dis. (1 min.). (2) Cotton, VB–B Bkn (L). (3) Aft-chr., OYT1 sl. dull.	**ANTHRACITE BLACK B pat. [C].** Disazo dyestuff: [*1-naphthylaminedisulphonic ac.*(4,7) + 1-naphthylamine] + diphenyl-m-phenylenediamine. — (1889).
697	H_2SO_4...G Bkn (M). Wool, N gray (L); gray black. NaOH...←BG Bkn (M).	(1) Compl. dis. (45 sec.). (2) Cotton, BV Bkn (L). (3) Aft-chr. Y gray (M).	**DIAMINE FAST BLACK X [C].**
698	H_2SO_4...G→ Bkn (D). Wool, N gray (D); blk. NaOH...N gray (D).	(1) Compl. dis. (15 sec.). (2) Cotton, B Bkn (M). (3) Aft-chr. N gray (D).	**DIAZO FAST BLACK SD [By].** (Intro. 1902).
699	H_2SO_4...G→ Bkn (M). Wool, N–V gray (L). NaOH...W gray (L).	(1) Compl. dis. (40 sec.). (2) Cotton, BT2+ dull. (3) Aft-chr. Y Bkn (L).	**BENZO INDIGO BLUE [By].** Trisazo dyestuff: 2 mol. 1, 8-dihydroxynaphthalenesulphonic ac.(4), (N_2= 2) + (*o-tolidine* + *1-aminonaphthalene* (N_2 = 4)). → (1891).
700	H_2SO_4...G Bkn (L). Wool, C gray (M); blk. NaOH...B Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, alm. white. (3) Aft-chr., G Bkn (M).	**NAPHTHYLAMINE BLACK 6B [By].**
701	H_2SO_4...G→ Bkn (L). Wool, V gray (M). NaOH...C–V gray (D).	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (M). (3) Aft-chr. W. gray (D).	**PARA DIAMINE BLACK BB Conc. [C].**
702	H_2SO_4...(f) BGS1. Wool, N–C gray (D); blk. NaOH...(f) BV Bkn (D).	(1) Compl. dis. (15 sec.). (2) Cotton, C gray (M). (3) Aft-chr. GY Bkn (D).	**BENZO FAST BLACK [By].** (Intro. 1896).
703	H_2SO_4...(f) BG. Wool, N gray (D); blk. NaOH...(f) V Bkn (v.D).	(1) Compl. dis. 1¾ min.). (2) Cotton C gray (D)–blk. (3) Aft-chr., W gray (D).	**COTTON FULLING BLACK B [B].**
704	H_2SO_4...BGS1 dull. Wool, N gray (L); blk. NaOH...C–N gray (D).	(1) Compl. dis. (15 sec.). (2) Cotton, C gray (M). (3) Aft-chr., GY Bkn (M).	**TITAN FAST BLACK R [H].**
705	H_2SO_4...(f) BGS1→. Wool, N gray (D). NaOH...(f) C gray (D).	(1) Compl. dis. (20 sec.). (2) Cotton, C gray (M). (3) Aft-chr., GY Bkn (v.D).	**DIAMINE FAST GRAY BN [C].**
706	H_2SO_4...BGS2. Wool, W–N gray (D). NaOH...G gray (D).	(1) Compl. dis. (1 min.). (2) Cotton, C gray (M+). (3) Aft-chr., W gray (D).	**OXYDIAMINE BLACK V 1 Ext. Conc. [C].**
707	H_2SO_4...BGS1. Wool, C gray (L); blk. NaOH...(f) C gray (D).	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (M). (3) Aft-chr., G gray (D).	**TITAN FAST BLACK G [H].**
708	H_2SO_4...(f) BGS1. Wool, C gray (D). NaOH...(f) C gray (D).	(1) Compl. dis. (35 sec.). (2) Cotton, B Bkn (M). (3) Aft-chr.. W gray (D).	**TITAN FAST BLACK B [H].**
709	H_2SO_4...(f) BG. Wool, C gray (D). NaOH...C gray (D).	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (v.D). (3) Aft-chr., N–W gray (M).	**ZAMBESI BLACK D [A].** (Intro. 1896).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Black and gray granular powder; alm. i. c. aq. (W gray (D–L)); i. alc.; s. conc. H_2SO_4 (VB Bkn (D)). — Ppt. tests: H_2SO_4, Cu and Ca, all ±; NaOH and Cr, +. — Dyeing: CD.	**695**
Brown-black cryst. powder; e. s. aq. (opaque, RV Bkn (M–L)); e. s. alc. (opaque, BV and BVT2); s. H_2SO_4 (C gray (L)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all +. — Allied brands: Phenylene Black [P]. — Dyeing: WGS.	**696**
Black cryst. powder; e. s. aq. (opaque, RV Bkn (D)); i. alc.; s. conc. H_2SO_4 (BGS1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, +. — Dyeing: CD, aftertreated w. Cr or Cu.	**697**
Black powder; e. s. aq. (opaque, RVS1 and VT2); s. alc. (BV Bkn (D–L)); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, +. — Dyeing: CDv.; CD.	**698**
Blue-black powder; e. s. aq. (opaque, BV and BVT2); alm. i. alc. (BT2→); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, –; Ca, +. — Dyeing: CD.	**699**
Red-black cryst. powder; e. s. aq. (opaque, GB→ and BT2); s. alc. (B); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, Cu and Ca, all ±; NaOH, –; Cr, + compl. — Dyeing: WGS.	**700**
Brown-black powder; e. s. aq. (opaque, RVS1 dull and RVT2 dull); s. alc. (v. dark blue-gray – C gray (L)); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, –; Ca, +. — Dyeing: CD.	**701**
Gray-black powder; e. s. aq. (opaque, BV Bkn (D–L)); s. alc. (V Bkn); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – . — Dyeing: CD.	**702**
Brownish-black powder; e. s. aq. (RV Bkn and gray (L)); sl. s. alc. (RV Bkn (M)); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, +. — Dyeing: CD.	**703**
V. dark brown-black powder; e. s. aq. (opaque, RV–V Bkn (D–L)); s. alc. (V and BV Bkn); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, –; Cu and Ca, +. — Dyeing: CD.	**704**
Black powder; e. s. aq. (opaque, BV Bkn (D–L)); s. alc. (BV Bkn–gray); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, –. — Dyeing: CD.	**705**
Red-black cryst. powder; e. s. aq. (opaque, W gray (L)); i. alc.; s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, +; NaOH, Cu and Ca, all ±; Cr, + compl. — Dyeing: CD.	**706**
Black powder; e. s. aq. (opaque, B Bkn (D–L)); s. alc. (opaque, B Bkn (D–L) dull); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, Cr and Cu, all +; NaOH and Ca, –. — Dyeing: CD.	**707**
Black powder; e. s. aq. (RV Bkn (D) and RV Bkn (L)–gray); s. alc. (RV Bkn (D)); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, +; Ca, –. — Dyeing: CD.	**708**
V. dark brown powder; e. s. aq. (opaque, V Bkn (D–M)); s. alc. (BV Bkn); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, –. — Dyeing: CDv.	**709**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) Wool color in Test 5. (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Aft.-chroming change (T.16).	Trade name. Constitutional name. Date of discovery or introduction.
710	H_2SO_4...BG Bkn (M). Wool, V gray (M); RV Bkn (v.D). NaOH...V→ Bkn (D).	(1) Compl. dis. (50 sec.). (2) Cotton, B Bkn (M). (3) Aft-chr., W gray (M).	**BLACK for HALF WOOL G [By].**
711	H_2SO_4...(f) BGS1. Wool, RV Bkn (v.D) – gray. NaOH...(f) V Bkn (D).	(1) Compl. dis. (30 sec.). (2) Cotton, BT2+ dull. (3) Aft-chr., W gray (D).	**PARA DIAMINE BLACK B Ext. Conc. [C].**
712	H_2SO_4...BG→Bkn (M). Wool, V gray (M). NaOH...RV Bkn (D) –gray.	(1) Comp. disc. (1 min.). (2) Cotton, B→ Bkn (v.D). (3) Aft-chr.. yellow gray (M).	**DIRECT BLUE BLACK B [By].**
713	H_2SO_4 ...GB Bkn (M). Wool, C gray (M+); BV (v.D). NaOH...BV Bkn (L).	(1) Compl. dis. (1 min.); air, YOT. (2) Cotton, B Bkn (M+). (3) Aft-chr., W gray (M).	**DIAMINOGENE B [C].** (Intro. 1895).
714	H_2SO_4...GBS2. Wool, violet gray (M). NaOH...V Bkn (D).	(1) Compl. dis. (40 sec.). (2) Cotton, BT2. (3) Aft-chr., W gray (D).	**OXYDIAMINOGENE OT [C].** (Intro. 1902).
715	H_2SO_4...GBS1. Wool, V gray (M). NaOH...RV Bkn (M–D).	(1) Compl. dis. (1 min.). (2) Cotton, BT2 dull. (3) Aft-chr. W gray (M).	**DIAMINE BLACK BH [C].** Disazo dyestuff: 2-aminonaphthol-(8)-sulphonic ac. (6), (N_2 = 7) + *benzidine* + 1-aminonaphthol-(8)-disulphonic ac.(3,6), (N_2 = 7). —(1890).
716	H_2SO_4...B Bkn (M). Wool, W gray (D+). NaOH...OR Bkn (L).	(1) Compl. dis.; air. ret. (O Tint). (2) Cotton, BV Bkn (D)–gray. (3) Aft-chr., YO Bkn (L–).	**COLUMBIA BLACK R [A].** Trisazo dyestuff: [1-methyl-2,4-diamino-benzene, (N_2 = 5) + *o-tolidine* + *7-amino naphthol*(1)*-disulphonic ac.* (3, 6), (N_2, N_2 = 2, 7)]+ 1-methyl-2, 4-diaminobenzene, (N_2 = 5). — (1893).
717	H_2SO_4...(f) B Bkn (M). Wool, V Bkn (M) – V gray (M); black. NaOH...V Bkn (D).	(1) Compl. dis. (20 sec.). (2) Cotton, BV Bkn (M–L). (3) Aft-chr., G gray (L).	**BENGAL DEEP BLACK B EXT. [SS].**
718	H_2SO_4...(f) B Bkn (M). Wool, V gray (D). NaOH...V Bkn (D).	(1) Compl. dis. (30 sec.). (2) Cotton, VT2–1. (3) Aft-chr., VR Bkn (D).	**DIAZO INDIGO BLUE 4RL [By].**
719	H_2SO_4...(f) BS2. Wool, V gray (D)–RV Bkn (D). NaOH...(f) V Bkn (v.D).	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (v.D). (3) Aft-chr., W gray (v.D).	**PLUTO BLACK TG EXT. [By].** (Intro. 1903).
720	H_2SO_4...VB Bkn (D). Wool, V gray (D). NaOH...N gray (v.D).	(1) Compl. dis. (1 min.). (2) Cotton, B Bkn (L). (3) Aft-chr., YO Bkn (D).	**OXYDIAMINOGEN OB [C].** (Intro. 1902).
721	H_2SO_4...(f) ←BV Bkn. (D). Wool, N gray (D); blk. NaOH...BG Bkn (D).	(1) Compl. dis. (20 sec.). (2) Cotton, B gray (v.D). (3) Aft-chr., G gray (D).	**DIRECT DEEP BLACK E EXT. [By].**
722	H_2SO_4...(f) BVS1. Wool, N gray (D); alm. black. NaOH...(f) BV Bkn (v.D).	(1) Compl. dis. (½ min.). (2) Cotton, V Bkn (D–). (3) Aft-chr., G gray (v.D).	**FORMIC BLACK TMKF [G].**
723	H_2SO_4...(f) BV Bkn (D). Wool, W–N gray (M); blk. NaOH...BG Bkn (D).	(1) Compl. dis. (20 sec.). (2) Cotton, BV Bkn (L). (3) Aft-chr., G gray (M).	**CHLORAMINE BLACK FF [S].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Bluish-black powder; e. s. aq. (V dull and VT2); i. alc.; s. conc. H_2SO_4 (B–GB). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, – ; Ca, +. — Dyeing: CWD.	**710**
Brown-gray sl. lustrous powder; e. s. aq. (opaque, V Bkn (D–L)); i. alc.; s. conc. H_2SO_4 (BG→). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, – ; Ca, ±. — Dyeing: CD.	**711**
Brown-black powder; e. s. aq. (V Bkn (D–M)); sl. s. alc. (V–RV Bkn (D)); s. conc. H_2SO_4 (B Bkn (L)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – ; Cu, + ; Ca, – or ±. — Dyeing: CD.	**712**
V. dark blue-gray to black powder; e. s. aq. (opaque, BV and BVT2); i. alc.; s. conc. H_2SO_4 (GB). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CDv.	**713**
Black powder; e. s. aq. (opaque, VBS1 and VBT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CDv. w. β-naphthol, etc.	**714**
Black powder; e. s. aq. (opaque, BV and BVT2); i. alc.; s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, + ; NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: CD.	**715**
Brown-black powder; e. s. aq. (opaque, RV and R Bkn (D) and R Bkn (L)); alm. i. alc.; s. conc. H_2SO_4 (VB). — Ppt. tests H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, –. — Dyeing: CD.	**716**
Brown-black powder; e. s. aq. (opaque, RV Bkn (M–L)); sl. s. alc. (BV Bkn (M–D and L)); s. conc. H_2SO_4 (BS1 dull). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – ; Cu and Ca, – or ±. — Dyeing: CDv.	**717**
W. gray (v.D); e. s. aq. (opaque, RV and RVT2); sl. s. alc. (VR Bkn); s. conc. H_2SO_4 (G gray (L)). — Ppt. tests: H_2SO_4 and NaOH, + ; Cr, + compl.; Cu and Ca, ±. — Dyeing: CDv.	**718**
D. brown cryst. powder; e. s. aq. (opaque, C–N gray (L)); sl. s. alc. (B Bkn (L)); s. conc. H_2SO_4 (BS1→). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, ±. — Dyeing: CD.	**719**
Neutral gray (v.D) powder; e. s. aq. (opaque, B and BT2); i. alc.; s. conc. H_2SO_4 (B). – Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – ; Cu, +. — Dyeing: CDv.	**720**
Brown-black powder; e. s. aq. (opaque, RV–V Bkn (D) and RV Bkn (M)); sl. s. alc. (B Bkn); s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: CD. — [" Direct Deep Black E (By) " was introduced in 1898.]	**721**
V. dark W gray powder; e. s. aq. (opaque, RVS1–RV Bkn (L)); i. alc.; s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – ; Cu and Ca, ±. — Dyeing: CD w. formic aldehyde aftertreatment.	**722**
Green-black lustrous powder; e. s. aq. (opaque and RV Bkn); sl. s. alc. (V Bkn); s. conc. H_2SO_4 (VBS1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, – ; Cu, ±. — Dyeing: CD.	**723**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) Wool color in Test 5. (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Aft.-chroming change (T.16.)	Trade name. Constitutional name. Date of discovery or introduction.
724	H_2SO_4...(f) BV Bkn (L). Wool, W gray (D). NaOH...N gray (D).	(1) Compl. dis. (15 sec.). (2) Cotton, ←B Bkn (L). (3) Aft-chr., GY Bkn (M).	**NEUTRAL WOOL BLACK B pat. [C].** (Intro. 1904).
725	H_2SO_4...(f) BV Bkn (v.D). Wool, C–V gray (D); black. NaOH...GB Bkn (M).	(1) Compl. dis. (20 sec.). (2) Cotton, BV Bkn (D). (3) Aft-chr., G Bkn (M).	**UNION BLACK E EXT. [B].**
726	H_2SO_4...BV Bkn (D). Wool, G gray (L); blk. NaOH...G Bkn (M+).	(1) Compl. dis. (20 sec.). (2) Cotton, B Bkn (v.L). (3) Aft-chr., GY Bkn (M).	**PALATINE BLACK 4B [B].**
727	H_2SO_4...VBkn (D). Wool, N gray (M). NaOH...W gray (M+).	(1) Compl. dis. (15 sec.). (2) Cotton, ←B Bkn (M). (3) Aft-chr., Y Bkn (L–).	**COLUMBIA BLACK 2BX [A].** Trisazo dyestuff: (Intro. 1895).
728	H_2SO_4...V Bkn (D). Wool, V gray (D). NaOH...RV Bkn (D).	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (L)–gray. (3) Aft-chr., YO Bkn (M).	**PLUTO BLACK B [By].** (Intro. 1897).
729	H_2SO_4...(f) V Bkn (D). Wool, V–N gray (L); black. NaOH...C gray (D).	(1) Compl. dis. (20 sec.). (2) Cotton, B Bkn (L). (3) Aft-chr., Y Bkn (L)–gray.	**INDIGEN BLACK NS [Klp].**
730	H_2SO_4...N gray (D). Wool, W gray (D+). NaOH...R Bkn (L).	(1) Compl. dis. (1 min.). (2) Cotton, B gray (D+). (3) Aft-chr., OY Bkn (M).	**PLUTO BLACK R [BY].** (Intro. 1897).
731	H_2SO_4...N–W gray (D). Wool, Y gray (L); blk. NaOH...G Bkn (D)–gray.	(1) Compl. dis. (15 sec.). (2) Cotton, BG–G Bkn (M). (3) Aft-chr., Y Bkn (L).	**ZAMBESI BLACK 2G [A].**
732	H_2SO_4...N–W gray (M). Wool, W gray (L); blk. NaOH...BG Bkn (M).	(1) Compl. dis. (45 sec.). (2) Cotton, BV Bkn (D). (3) Aft-chr., YG Bkn (L).	**RENOL BLACK RG [t.M].**
733	H_2SO_4...G gray (L). Wool, W gray (M). NaOH...N–W gray (D).	(1) Compl. dis. (30 sec.). (2) Cotton, B Bkn (D). (3) Aft-chr., G gray (D).	**ZAMBESI BLACK B [A].** (Intro. 1895).
734	H_2SO_4...G gray (D). Wool, V gray (M). NaOH...W gray (D).	(1) Compl. dis. (30 sec.). (2) Cotton, V Bkn (M). (3) Aft-chr., YO Bkn (M–D).	**DIAZO INDIGO BLUE 2RL [By].**
735	H_2SO_4...G gray (L+). Wool, V gray (L). NaOH...W–N gray (L).	(1) Compl. dis. (15 sec.). (2) Cotton, B Bkn (D). (3) Aft-chr., Y Bkn (L).	**PLUTO BLACK 3B EXT. [By].**
736	H_2SO_4...C gray (D). Wool, B gray (M+); blk. NaOH...B Bkn (D).	(1) Compl. dis. (20 sec.). (2) Cotton, BV Bkn (L). (3) Aft-chr., G gray (M) dull.	**CHLORAMINE BLACK Ext. Conc. [SS].**
737	H_2SO_4...C–N gray (v.D). Wool, Y–G gray (L); black. NaOH...G gray (D).	(1) Compl. dis. (2 min.). (2) Cotton, ←B Bkn (M). (3) Aft-chr., W gray (D).	**ZAMBESI BLACK V [A].**
738	H_2SO_4...C gray (D). Wool, W gray (L). NaOH...C gray (D).	(1) Compl. dis. (75 sec.). (2) Cotton, BV Bkn (D). (3) Aft-chr., YG Bkn (L).	**RENOL BLACK G Conc. [t.M].**
739	H_2SO_4...C gray (D). Wool, C gray (L); blk. NaOH...C gray (D).	(1) Compl. dis. (75 sec.). (2) Cotton, BV Bkn (D). (3) Aft-chr., YG Bkn (L).	**RENOL BLACK 2G Conc. [t.M].**
740	H_2SO_4...C gray (D). Wool, C gray (L); blk. NaOH...C gray (D).	(1) Compl. dis. (50 sec.). (2) Cotton, BV Bkn (D). (3) Aft-chr., YG Bkn (L).	**RENOL BLACK R Conc. [t.M].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
V. dark red-brown powder; e. s. aq. (opaque, BV Bkn (D–L)); sl. s. alc. (VB Bkn); s. conc. H_2SO_4 (B Bkn (M)). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Allied brands: Neutral Wool Black G. — Dyeing: WG.	724
Black powder; e. s. aq. (BV Bkn); alm. i. alc.; s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, +. — Dyeing: CWD.	725
Brownish-black powder; e. s. aq. (VB dull and ←VBT2 dull); s. alc. (dark G); s. conc. H_2SO_4 (GB dull). — Ppt. tests: H_2SO_4, NaOH (GB) and Cu, all –; Cr, + compl.; Ca, +. — Dyeing: WGS.	726
Green-black powder; e. s. aq. (opaque, V Bkn); i. alc.; s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, –; Ca ±. — Allied brands: Columbia Black 2BW [A] and F, FB, FF Extra [A]. — Dyeing: CD.	727
Brown-black cryst. powder; e. s. aq. (opaque, V Bkn (D) and RV Bkn (L)); alm. i. alc.; s. conc. H_2SO_4, (BV Bkn (M)). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, –. — Dyeing: CD.	728
Black lustrous powder; e. s. aq. (opaque, B Bkn (D–L)); alm. i. alc.; s. conc. H_2SO_4 (VB +). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, –; Cu and Ca, ±.	729
Green-black cryst. powder; e. s. aq. (YO Bkn); i. alc.; s. conc. H_2SO_4 (VS1). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, ±. — Dyeing: CD.	730
D. red-brown cryst. powder; e. s. aq. (opaque, BGS1 and BGT2); s. alc. (opaque, BGS1 and BGT2); s. conc. H_2SO_4 (BV Bkn (D)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, +. — Dyeing: CDv.	731
Brown-black cryst. powder; e. s. aq. (opaque, RV Bkn (M–L)); v. sl. s. alc. (GB Bkn); s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH, – (blue gray); Cu, +. — Dyeing: WGSCh.	732
N. gray (v.D) – black powder; e. s. aq. (opaque, GBS2, B Bkn (L)); s. alc. (dark violet gray); s. conc. H_2SO_4 (← GBS1). — Ppt. tests: H_2SO_4, Cr, Cu, + compl.; NaOH, +; Ca, ±. — Dyeing: CDv.	733
Brown-black cryst. powder; e. s. aq. (opaque, V–RV and RVT2); s. alc. (dull V); s. conc. H_2SO_4 (B–BG Bkn (L)). — Ppt. tests: H_2SO_4, Cu, Ca, –; NaOH, +; Cr, + compl. — Dyeing: CDv. w. β-naphthol.	734
Greenish-black cryst. powder; e. s. aq. (opaque, RV Bkn (D)); i. alc.; s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, Cr and Cu, + compl.; NaOH and Ca, +. — Dyeing: CD.	735
D. brown-black cryst. powder; e. s. aq. (opaque, BVS1, and BVT2); sl. s. alc (BV Bkn (M)); s. conc. H_2SO_4 (VBS1). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, –. — Dyeing: CD.	736
Brown-black sl. cryst. powder; e. s. aq. (opaque, B Bkn (D–L)); e. s. alc. (opaque, BGS2 and BGT2); s. conc. H_2SO_4 (BS2 v. dull). — Ppt. tests: H_2SO_4, Cr, Cu, + compl.; NaOH, Ca, –.	737
Green-black cryst. powder; e. s. aq. (opaque, RV Bkn (D–L)); sl. s. alc. (V Bkn); s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (green gray dark), Cu and Ca, all –. — Dyeing: CD.	738
D. gray-black powder; e. s. aq. (opaque, RV Bkn (D–L)); s. alc. (GB Bkn); s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (dark green-gray), Cu and Ca, all –. — Dyeing: CD.	739
Gray-black sl. cryst. powder; e. s. aq. (opaque, RV Bkn (D–L)); s. alc. (C gray–B Bkn (L)); s. conc. H_2SO_4 (VB–BV). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – (blue gray). — Dyeing: CD.	740

DYES OF GENUS III, AZO AND NITRO

WHOSE COLOR ON WOOL IS DISCHARGED IN TEST 8 TO WHITE OR A TONE LIGHTER THAN

DIVISION B.—DYES NOT COLORING COTTON

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
741	Aft-chr. [+] (BV Bkn (D)). H_2SO_4...(f) VR. NaOH...←R.	(1) Compl. dis. (½ min.). (2) Cotton, alm. white. (3) Wool, VR–R sl. dull.	**ANTHRACENE CHROME BLUE BB [C].** (Intro. 1904).
742	Aft-chr. [+] (C gray (D)). H_2SO_4...VR→. NaOH...RT1.	(1) Compl. dis. (15 sec.). (2) Cotton, OT3. (3) Wool, VR–R, T1+ bril.	**AZO EOSINE EBB [Bs].**
743	Aft-chr. [+] (BG–gray (D)). H_2SO_4...(f) VR. NaOH...R.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, VR→ bril.	**BIEBRICH ACID RED 4B pat. [K].** Azo color from naphthaleneperidioxysulphonic ac. K. — (Intro. 1898).
744	Aft-chr. [+] (blue gray (D)). H_2SO_4...VR. NaOH...RT1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VR–R, T1.	**BIEBRICH ACID RED 5B [K].**
745	Aft-chr. [+] (W gray (D)). H_2SO_4...VRS1→. NaOH...W gray (D).	(1) Alm. compl. dis. (2) Cotton, alm. white. (3) Wool, VR Bkn (M).	**ACID ANTHRACENE BROWN T [By].** (Intro. 1900).
746	Aft-chr. [+] (W gray (D)). H_2SO_4...←RS3. NaOH...(1) RO; (2, 3) ←O.	(1) Compl. dis. (20 sec.). (2) Cotton, white or VRT4. (3) Wool, VR.	(1) **AZO ACID VIOLET R EXT. [By].** (2) **AZO ACID VIOLET 4R [By].** (3) **AZO VIOLET 4R [By].** (2) Azo derivative of 1,8-dioxynaphthalenesulphonic ac.(4). — (Intro. (1) 1895; (2) 1890).
747	Aft-chr. [+] (BV and gray, uneven). H_2SO_4...←R. NaOH...BV Bkn (D).	(1) OYT2 dis. (2) Cotton, white. (3) Wool, VRT1+→.	**ALIZARINE FUCHSINE RD PASTE [By].**
748	Aft-chr. [+] (C gray (D)). H_2SO_4...GBS1. NaOH...VRS1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VR.	**CHROMOTROPE 8B [M].** Azo dyestuff: *naphthionic ac.* + chromotropic ac. — (1890).
749	Aft-chr. [+] (YO Bkn (D)). H_2SO_4...←GBS2. NaOH...(f) V.	(1) Compl. dis. (½ min.). (2) Cotton, VRT3+. (3) Wool, VR–VR, S1.	**PALATINE CHROME BROWN G [B].**

DERIVATIVES AND OTHER COMPOUNDS

TINT 2, AND WHOSE COLOR IS NOT RESTORED BY AIR OR PERSULPHATE IN TESTS 9 OR 10.

TO A TONE AS DEEP AS TINT 2 IN TEST 5.

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark brown (YO Bkn (v.D)) powder; e. s. aq. or alc. (←R); s. conc. H_2SO_4 (←VR). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, +; Ca, –. — Dyeing: WGSCh.	**741**
Violet-black powder; e. s. aq. (bril. red and VR–R, T2); s. alc. (VRT1→); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, ±; Ca, –. — Dyeing: WGS.	**742**
Black powder; e. s. aq. (deep ←R); s. alc. (VRT1 bril.); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, –; NaOH, – (R, OR and ROT2); Cr, –; Ca, –. — Dyeing: WGS. — Allied brands: Biebrich Acid Red 3G, B, 2B, and 4B.	**743**
RS2–3 powder; e. s. aq. (bril. ←RT1); s. alc. (R–VR, T1); s. conc. H_2SO_4 (bril. VR). — Ppt. tests: H_2SO_4, –; NaOH, – (O and ROT2); Cr, –; Ca, –. — Dyeing: WGS.	**744**
Black powder; s. aq. (OS1); s. alc. (←RT1); s. conc. H_2SO_4 (VRT1). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + compl. (brown); Ca, –. — Dyeing: WGSCh.	**745**
(1, 2) RV Bkn (v.D) dull, (3) RV Bkn (M), powder; e. s. aq. (←R and VRT2); s. alc. (VR); s. conc. H_2SO_4 (VRT1). — Ppt. tests: H_2SO_4, –; NaOH, – (O); Cr, +; Ca, –. — Dyeing: WGS.	**746**
Reddish-black paste; e. s. aq. (R. bril. and ←RT2); d. s. alc. (ORT1); s. conc. H_2SO_4 (VR–R). — Ppt. tests: H_2SO_4, –; NaOH, – (dark red, VR→ and VRT2); Cr, +; Ca, –.	**747**
Alm. black powder; e. s. aq. (bril. VRT1); d. s. alc. (VRT1); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, –; Ca, –. — Dyeing: WGS.	**748**
Black powder; e. s. aq. (VRT1); s. alc. (RT1); s. conc. H_2SO_4 (dull bluish). — Ppt. tests: H_2SO_4, + (RV Bkn (D)); NaOH, + compl.; Ca, ±. — Dyeing: WGSCh.	**749**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
750	Aft-chr. [+] (VBS4). H_2SO_4...(f) B. NaOH...R-VR.	(1) Compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, VR.	**AZO ACID VIOLET AL [By].** (Intro. 1904).
751	Aft-chr. [+] (G gray (M)). H_2SO_4...(f) B. NaOH...RV Bkn (M) (at first GB, finally R).	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VR.	**ACID ALIZARINE GRAY B [K].**
752	Aft-chr. [+] (B Bkn (D)). H_2SO_4...(f) VBS2. NaOH...(f) V.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, ←VR.	**ANTHRACENE CHROME BLUE F [C].**
753	Aft-chr. [+] (BG Bkn (M)). H_2SO_4...VS1. NaOH...VRT1.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, VRT1; VRS2.	**ACID ALIZARINE BLACK KSR [K].**
754	Aft-chr. [+] (VB Bkn (D)). H_2SO_4...(f) V. NaOH...VS2.	(1) Compl. easy dis. (2) Cotton, white. (3) Wool, VR.	**FAST MORDANT BLUE R [M].**
755	Aft-chr. [+] (C gray (D)). H_2SO_4...←RV Bkn (D). NaOH...VRS1.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, VR −, dull.	**ANTHRACENE CHROME BLACK PPN EXT. pat. [C].**
756	Aft-chr. [+] (B Bkn (D)). H_2SO_4...(f) RVS1. NaOH...VR→.	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, VR.	**AZO WOOL VIOLET 7R [C].** (Intro. 1903).
757	Aft-chr. [+] (W. gray (D)→ OY Bkn (D)). H_2SO_4...RVS1. NaOH...←RT1.	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, VR-R.	**AZO FUCHSINE G [By].** Monazo dyestuff: *sulphanilic ac.* + 1, 8-dioxynaphthalenesulphonic ac. (4), (N_2 = 2). — (1889).
758	Aft-chr. [+] (BG Bkn (M)). H_2SO_4...←RV Bkn (M). NaOH...R −.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, VR-R, T1; RS2.	**CHROME ACID BLACK G [I].**
759	Aft-chr. [+] (V Bkn (D)). H_2SO_4...RV Bkn (D). NaOH...R −.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, VRT1 +; reddish black.	**OMEGA CHROME BLACK PB [S].**
760	Aft-chr. [+] (YG Bkn (M)). H_2SO_4...(f) N gray (v.D). NaOH...YO Bkn (D).	(1) Compl. dis. (20 sec.). (2) Cotton, white. (3) Wool, VR-R sl. dull.	**FAST CHROME GREEN 3G [K].**
761	Aft-chr. [+] (black). H_2SO_4...(f) black. NaOH...(f) (1) RV; (2) VR.	(1) OYT2 + dis. (2) Cotton, alm. white. (3) Wool, VR-R, S2.	(1) **DIAMOND BLACK P2B [By].** (2) **DIAMOND BLACK PV [By].** ((2) Intro. 1902).
762	Aft-chr. [−]. H_2SO_4...R. NaOH...←RT1-R.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, VR→ bril.	**LANAFUCHSINE 6B [C].** Azo derivative of chromotropic ac. (Intro. 1901).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Black powder; e. s. aq. (OS1); s. alc. RT1; s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, – ; NaOH, – ; Cr, + ; Ca, –. — Dyeing: WGS.	**750**
Black powder; e. s. aq. (←R); s. alc. (VRT1); s. conc. H_2SO_4 (B, intense). — Ppt. tests: H_2SO_4, – ; NaOH, – ; Cr, + ; Ca, –. — Dyeing: WCh (single bath).	**751**
Brown-black powder; e. s. aq. (bril. VR–R); s. alc. (VRT1); s. conc. H_2SO_4 (BV). — Ppt. tests: H_2SO_4, – ; NaOH, – (RV and RV–VR, T2); Cr, ± ; Ca, –. — Dyeing: WGSCh.	**752**
V. dark brown powder; e. s. aq. (VR, VRT2); s. alc. (RT1); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, NaOH, Cu, Ca, – ; Cr, + compl.	**753**
Black powder; e. s. aq. (bril. VR–R, T1); s. alc. (VRS1); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, – ; NaOH, – (RV and ←VRT2); Cr, – ; Ca, –. — Dyeing: WGSCh, WCh.	**754**
Dull black powder; e. s. aq. (R and VRT2→); sl. s. alc. (dull ORT2); s. conc. H_2SO_4 (←VR). — Ppt. tests: H_2SO_4 ± ; NaOH, – (on dilution, ←VR); Cr, + ; Ca, –. — Dyeing: WGSCh.	**755**
Brown-black powder; e. s. aq. (bril. VR–R, T1); s. alc. (VRT1); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, – ; NaOH, – ; Cr, ± ; Ca, –. — Dyeing: WGS.	**756**
Dark red-brown powder; e. s. aq. (bril. ←RT1); s. alc. (VRT1); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, – ; NaOH, – (O, OR and ROT2); Cr, + ; Ca, –. — Dyeing: WGS.	**757**
Dark brown powder; e. s. aq. (R and VRT2); s. alc. (RT2); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, – ; NaOH, – ; Cr, + ; Ca, –. — Dyeing: WGSCh.	**758**
Black powder w. sl. brassy lustre; e. s. aq. (dull red); s. alc. (VR→); s. conc. H_2SO_4 (V–RV). — Ppt. tests: H_2SO_4, + compl. (V); NaOH, – (on dilution ORT1); Cr, + compl. (VR); Ca, ±.	**759**
YO Bkn (D) powder; e. s. aq. (R and RT2); s. alc. (RT1+); s. conc. H_2SO_4 (VB Bkn (M)). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all – ; Cr, + compl. — Dyeing: WCh.	**760**
Black powder; e. s. aq. (←R and VRT2); s. alc. (R–VR bril.); s. conc. H_2SO_4 (1) (B Bkn (D)), (2) (violet gray). — Ppt. tests: (1) tannin, – ; H_2SO_4, – ; NaOH, – (RV→); Cr, + ; Ca, –. — Dyeing: WGSCh.	**761**
RS2 powder; e. s. aq. (bril. VRT1→); s. alc. (VR–R, T1 bril.); s. conc. H_2SO_4 (←RT1 bril.). — Ppt. tests: H_2SO_4, – ; NaOH, – (on dilution OR and OT2); Cr, – ; Ca, –. — Dyeing: WGS.	**762**

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
763	Aft-chr. [−]. H_2SO_4...RT. NaOH...O dull.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VR–R bril.	(1) **AZO FUCHSINE 6B** [By]. (2) **AZO ACID RED 5B** [M]. (3) **AMIDO NAPHTHOL RED 6B** [M]. ((3) Intro. 1902).
764	Aft-chr. [−]. H_2SO_4...OR. NaOH...ORS1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VRS1.	**PALATINE CHROME BROWN R** [B].
765	Aft-chr. [−]. H_2SO_4...RO−. NaOH...RO−, dull.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VRT1+.	**TOLAN RED B** [K]. Monazo dyestuff: *aniline* + 1-aminonaphthol(8)-disulphonic ac.(4,6), (N_2 = 7).—(1893).
766	Aft-chr. [−] (VRT1). H_2SO_4...(f) GB. NaOH...OS1.	(1) Compl. dis. (15 sec.). (2) Cotton, alm. white. (3) Wool, VR–R, T1.	**BENZYL BORDEAUX B** [I].
767	Aft-chr. [−] (VR sl. dull). H_2SO_4...←BS1. NaOH...OR dull.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, VR–R, T1.	**AZO BORDEAUX** (Sch).
768	Aft-chr. [−]. H_2SO_4...(f) VB. NaOH...VRS1.	(1) Fair dis. (½ min.). (2) Cotton, RT4. (3) Wool, VR–R, T1.	**CLOTH SCARLET R** [K]. Disazo dyestuff: *aminoazotoluenesulphonic ac.* + β-naphthol, (N_2 = 1). (1878).
769	Aft-chr. [−]. H_2SO_4...(f) V. NaOH...←RS1.	(1) Compl. dis. (20 sec.). (2) Cotton, white. (3) Wool, ←VRT1+.	**GUINEA BORDEAUX B** [A].
			SECTION OF RED
770	Aft-chr. [−] (←OR Bkn (D)). H_2SO_4...(f) VRS2. NaOH...VR–RV.	(1) Compl. dis. (30 sec.). (2) Cotton, RT3. (3) Wool, ←R bril.	**NIGROPHOR A** [B].
771	Aft-chr. [+] (VR Bkn (M)). H_2SO_4...←VRS1. NaOH...R − OR, T1 sl. dull.	(1) Compl. dis. (⅓ min.) (2) Cotton, white. (3) Wool, RT1+→.	**FAST RED EXT.** [A].
772	Aft-chr. [+] (BV Bkn (D)). H_2SO_4...←RS1. NaOH...R–OR.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←R.	**XL CARMOISINE 6B** [H].
773	Aft-chr. [+] brownish black. H_2SO_4...RS2. NaOH...OR.	(1) Compl. dis. (½ min.). (2) Cotton, VRT3−. (3) Wool, ←R.	**AZO FUCHSINE GN EXT.** [By].
774	Aft-chr. [+] OY Bkn (L). H_2SO_4...ORT1. NaOH...R–VR.	(1) Compl. dis. (yel. sol.) (2) Cotton, white. (3) Wool, RT1.	**COCHINEAL** (AD). The dried, or dried and powdered bodies of an insect indigenous to Mexico, *Coccus cacti*. Hemispherical, striated, dark reddish-brown bodies similar to the "lady bird" in size and appearance; has faint characteristic odor; contains 10–20 per cent coloring matter, carminic ac. ($C_{17}H_{18}O_{10}$) in form of a glucoside.

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
ORS3 powder; e. s. aq. (bril. VR–R, T1); i. alc.; s. conc. H_2SO_4 (←RT1). —Ppt. tests: H_2SO_4, –; NaOH, – (O and YOT2); Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**763**
Olive-black powder; e. s. aq. (←R and ←RT2); s. alc. (O→ dull); s. conc. H_2SO_4 (RT1→ bril.). — Ppt. tests: H_2SO_4, – (←RO, O and OT2); NaOH, – (R→, RO and ROT2); Cr, + compl.; Ca, –. — Dyeing: WGSCh.	**764**
Brown powder (OR Bkn (D)); e. s. aq. (VR–R, T1); s. alc. (VRT1); s. conc. H_2SO_4 (RT2). — Ppt. tests: H_2SO_4, –; NaOH, – (OR and RT2); Cr, –; Cu, –; Ca, –. — Dyeing: WGS. — Allied brands: Tolan Red G [K].	**765**
RS2 powder; e. s. aq. (R and VRT); s. alc. (RT1→); s. conc. H_2SO_4 (RT1 + dull). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, – (OR); Cr, –; Cu, – (OR); Ca, –. — Dyeing: WGS.	**766**
Black powder; e. s. aq. (←R and ←RT2); s. alc. (RT2→); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (OR and ROT2 after dilution); Cr, +; Ca, –. — Dyeing: WGS. — Allied brands: Azo Bordeaux [By] and Buffalo Rubine [Sch] are monazo dyestuffs, *α-naphthylamine* + 1-naphtholdisulphonic ac. [4,8], [N_2 = 2].	**767**
Brown-black powder; s. aq. (R and R–VR, T2); d. s. alc. (←RT2); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, –; NaOH, +; Ca, + compl. — Dyeing: WGS.	**768**
RS3 powder; e. s. aq. (R and VRT); s. alc. (VR); s. conc. H_2SO_4 (V–RV). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**769**
COLORS ON WOOL.	
Reddish-black powder; v. sl. s. aq. (RT3); s. h. aq. (R and VRT2); e. s. alc. (R); s. conc. H_2SO_4 (V Bkn). — Dyeing: Printing.	**770**
Dark ORS2 powder; e. s. aq. (R→, OR and RT2); s. alc. (RT1→); s. conc. H_2SO_4 (VR). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, – (ROT2 dull after dilution); Cr, +; Cu, –; Ca, –. — Dyeing: WGS.	**771**
RS3 powder; e. s. aq. (R and ←RT2); s. alc. (←RT1); s. conc. H_2SO_4 (VRT1→). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, – (OR); Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**772**
Dark brown powder; s. aq. (R and ←RT2); s. alc. (←RT1); s. conc. H_2SO_4 (←R).— Ppt. tests: tannin, –; H_2SO_4, + compl.; NaOH, – (OR); Cr, + alm. compl.; Cu, –; Ca, +. — Dyeing: WGS.	**773**
Sl. s. aq. (←OT1); sl. s. alc. (OT2); s. conc. H_2SO_4 (←RT2). — Cf. Formanek's "Spektralanalyse," p. 258, for spectra. — Dyeing: WSn, WAl.	**774**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
775	Aft-chr. [+] OY Bkn (L). H_2SO_4...RO–ROT1 sl. Bkn. NaOH...VR Bkn (M).	(1) Alm. compl. dis. (2) Cotton, white. (3) Wool, ←R Bkn (L).	**LAC DYE POWDER. (AD).** Derived from the E. Indian insect *Coccus lacca* as a by-product in the preparation of shellac. The coloring matter is said to be composed of derivatives of laccaic acid ($C_{16}H_{12}O_8$).
776	Aft-chr. [+] VB Bkn (D). H_2SO_4...(f) BS1. NaOH...(f) BVS2.	(1) Compl. dis., 90 sec. (2) Cotton, alm. white. (3) Wool, ←R sl. dull; RS2–blk.	**PALATINE CHROME BLACK B (B).**
777	Aft-chr. [+] RS2. H_2SO_4...(f) BV–V, S2. NaOH...RS1.	(1) Compl. dis. (35 sec.). (2) Cotton, RT3. (3) Wool, R+→ bril.	**FAST RED A [A].** **FAST RED A (Lev).** Monazo dyestuff: *α-naphthylaminesulphonic ac.*(naphthionic ac., or α-naphthylamine-sulphonic ac. L., or a mixture of the two) + β-naphthol, (N_2 : OH = 1 : 2). — (1877).
778	Aft-chr. [−] (VR Bkn (M)). H_2SO_4...(f) BVS1. NaOH...R.	(1) Compl. dis. (25 sec.). (2) Cotton, RT3. (3) Wool, R+.	**FAST RED B [B].** Monazo dyestuff: *α-naphthylamine* + naphthol(2)-disulphonic ac.(3,6), (N_2= 1). — (1878).
779	Aft-chr. [+] (B Bkn (D)). H_2SO_4...(f) ←BVS1. NaOH...RS1.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←R sl. dull.	**AZOCHROME BLUE TB [C].**
780	Aft-chr. [+] (VB Bkn (D)). H_2SO_4...(f) BVS1. NaOH...←R.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, R+.	(1) **CHROMOTROPE DW [M].** (2) **CHROME FAST BLUE R [I].**
781	Aft-chr. [+] (BV Bkn (D)). H_2SO_4...(f) BVS1. NaOH...←R.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, R.	(1) **CHROME FAST BLUE 4B [A].** (2) **DIAMOND BLUE R [By].**
782	Aft-chr. [+] (Black–RV Bkn (D). H_2SO_4...(f) BV Bkn (D). NaOH...(f) RVS1.	(1) Compl. dis. (1 min.). (2) Cotton, VRT4. (3) Wool, RS2–1.	**META CHROME BORDEAUX B [A].** Azo derivative of picraminic ac. (Intro. 1902).
783	Aft-chr. [+] BV Bkn (D). H_2SO_4...(f) V. NaOH...R+.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, R bril.	(1) **AZO RUBINE A [C].** (2) **AZO RUBINE S [A].** (3) **BRILLIANT CRIMSON O [M].** (4) **CARMOISE [Lev].** (5) **ACID RUBINE SB [B].** (6) **CHROME BLUE R [B].** (7) **CHROME FAST BLUE B [A].** Monazo dyestuff: *naphthionic ac.* + 1-naphtholsulphonic ac.(4), (N_2=2). (1883).
784	Aft-chr. [+] Black–BV Bkn (D). H_2SO_4...(f) V. NaOH...R Bkn (D).	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, R.	**CHROMOTROPE 2B [M].** Monazo dyestuff: *p-nitraniline* + chromotropic ac. (N_2 : OH = 2 : 1). (1890).
785	Aft-chr. [+] RS3. H_2SO_4...(f) RV. NaOH...(f) ORS2.	(1) Compl. dis. (1¾ min.). (2) Cotton, VRT3. (3) Wool, R bril.	**DOUBLE PONCEAU 4R [By].** Azo dyestuff.— (1897).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
VR Bkn (v.D) powder which leaves much infusible ash after ignition; i. c. aq.; i. alc.; s. dil. ammonia (VR); s. conc. H_2SO_4 (ORTI). — Dyeing: Used for reds and scarlets on wool with metallic mordants in much the same way as Cochineal.	**775**
Black powder; s. aq. (VR); s. alc. (←OR); s. conc. H_2SO_4 (GB→).— Ppt. tests: H_2SO_4, ± (YO Bkn (L)); NaOH, –; Cr, + (dull RT2); Ca, –. — Dyeing: WGSCh.	**776**
Bril. or dark red powder; e. s. aq. (R→ and RT2→); e. s. alc. (OR); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, + (YO); NaOH, +; Cu, + compl.; Cu, –; Ca, – or v. slow in appearing. — Dyeing: WGS. — Allied brands: Fast Red A [B] [O] [By] (K); Fast Red [F] [L] [t.M]; Fast Red O [M]; Rocelline [C] [DH] [I] [G] [P] [S] [t.M] [Mo]; Brilliant Red [Sch]; Cardinal Red [H]; Cerasin; Rouge I [MLy].	**777**
RS3 powder. Otherwise as for No. 777 above. — Allied Brands: Fast Red [BK]; Bordeaux B [A] [BK] (Lev) [M] [H]; Bordeaux BL [C]; Bordeaux G [D]; Bordeaux R extra [M]; Cerasine [DH]; Rouge B [MLy].	**778**
Dark brown micro cryst. powder; e. s. aq. (←R and VRT2); s. alc. (RV); s. conc. H_2SO_4 (←BV). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGSCh.	**779**
Dark brown powder; e. s. aq. (R and ←RT2); s. alc. (←RT2); s. conc. H_2SO_4 ((1)←RV and (2) BV). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, +; Ca, –. — Dyeing: WGSCh.	**780**
Brown-black powder; e. s. aq. (R and ←RT2); s. alc. (RT2); s. conc. H_2SO_4 (BV→). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, +; Ca, –. — Dyeing: WGSCh.	**781**
Brown paste; aq. filtrate, clear brown-red; NaOH filtrate, clear fuchsine-red; s. alc. (dull R→); s. conc. H_2SO_4 (←BV). — Ppt. tests: tannin, –; H_2SO_4, + compl.; NaOH, – (VRS1 and VRT2 dull); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WCh.	**782**
(1, 2, 3, 4, 6) Dark R powders, (5, 7) dark brown powders; e. s. aq. (R→ and ←RT2); s. alc. (←RT1 and R→); s. conc. H_2SO_4 (V→). — Ppt. tests: H_2SO_4, –; NaOH, – (OR); Cr, +; Ca, –. — Dyeing: (1, 2, 5) WGS; (7) WGSCh; (3) WGS, CT. — Allied brands: Azo Rubine [t.M] [Lev] [O]; Azo Acid Rubine [D]; Azofuchsine Acide [RF]; Fast Red C [B]; Carmoisine [B] [By] [S]; Carmoisin S [H]; Crimson [PL]; Rouge Rubis A [M.Ly].	**783**
R Bkn (D) powder; e. s. aq. (R→, OR and ←RT2); s. alc. (VRT–2→ bril.); s. conc. H_2SO_4 (←RV). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, – (←VR, ←RS1 and VRT2); Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**784**
R powder; s. aq. (R→, OR and ORT2); s. alc. (RO); s. conc. H_2SO_4 (←VR). — Ppt. tests: tannin, –; H_2SO_4, + compl. (RO–O); NaOH, – (dull); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WGS.	**785**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
786	Aft-chr. [+] Y Bkn (M). H_2SO_4...C gray (v.D). NaOH...W. gray (v.D).	(1) Compl. dis. (½; 2 min.). (2) Cotton, alm. white. (3) Wool, ←R Bkn (L); black.	**ERA BLACK J** [Lev].
787	Aft-chr. [−]. H_2SO_4...VR. NaOH...OR.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, R–ORT1.	**MILLING SCARLET 4R Conc.** [M]. (Intro. 1904).
788	Aft-chr. [−]. H_2SO_4...R→. NaOH...R→ dull.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, R–OR.	**GUINEA RED 4R** [A]. Azo dyestuff: derivative of naphthol (1)-disulphonic ac.(3,8). — (Intro. 1896).
789	Aft-chr. [−] (VRS1). H_2SO_4...R. NaOH...OR.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, (1) ←R; (2)←RT1+.	(1) **DIAMOND BORDEAUX R** [By]. (2) **DOMINGO ALIZARINE CLARET** [Bs].
790	Aft-chr. [−]. H_2SO_4...R. NaOH...ORS1.	(1) Compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, ←R.	**LANAFUCHSINE SB** [C]. (Intro. 1897).
791	Aft-chr. [−]. H_2SO_4...RS2. NaOH...ROS1.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, R–OR.	**PONCEAU 5R** [M]. Disazo dyestuff: *aminoazobenzene* + naphthol(2)-trisulphonic ac.(3,6,8), (N_2 : OH = 1 : 2). — (1881).
792	Aft-chr. [−]. H_2SO_4...R→. NaOH...ROS1.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, R+ bril.	(1) **AMIDO NAPHTHOL RED G** [M]. (2) **AZO PHLOXINE 2G** [By]. (Intro.: (1) 1902; (2) 1903).
793	Aft-chr. [−]. H_2SO_4...RS2. NaOH...O.	(1) Compl. dis. (20 sec.). (2) Cotton, alm. white. (3) Wool, R→ bril.	**XL EOSINE 5B** [H].
794	Aft-chr. [−]. H_2SO_4...R→. NaOH...OS1.	(1) Compl. dis. (25 sec.). (2) Cotton, white. (3) Wool, RT1+.	(1) **LANAFUCHSINE SG** [C]. (2) **AZO ACID RED BA** [A]. (3) **KITON RED S** [Klp]. (4) **SORBINE RED** [PK]. ((1,4) Intro. 1897).
795	Aft-chr. [−]. H_2SO_4...R→. NaOH...YOT1.	(1) Compl. dis. (25 sec.). (2) Cotton, white. (3) Wool, RT1−.	(1) **BIEBRICH ACID RED 2B** [K]. (2) **AZO CRIMSON S** [By]. — (1) Azo derivative of naphthalene-peridioxysulphonic ac. — (Intro. 1898).
796	Aft-chr. [−] R Bkn (D). H_2SO_4...ROS1→. NaOH...VRS1→.	(1) OYT2 dull dis. (½ min.; yel. sol.). (2) Cotton, R Bkn (L), uneven. (3) Wool, RT1+ dull.	**ALIZARINE MAROON PASTE** [B]. Aminoalizarine mixed w. aminopurpurine. — (1885).
797	Aft-chr [−]. H_2SO_4...←RO. NaOH...ORT1 dull.	(1) Compl. dis. (¼ min.). (2) Cotton, white. (3) Wool, RT1.	**AZO ORCHIL R** [A]. (Intro. 1893).
798	Aft-chr. [−]. H_2SO_4...(f) GB–BG. NaOH...(f) VS1.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, ←R.	(1) **CROCEINE SCARLET 10B** [By]. (2) **CROCEINE SCARLET 10B** [K]. (3) **PONCEAU 10RB** [A]. ((3) Intro. 1893).
799	Aft-chr. [—]. H_2SO_4...(f) GB. NaOH...←R.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, RT1+.	**CROCEINE SCARLET 9B** [K].

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Black powder; e. s. aq. (V and RVT2); d. s. alc. (←RVT1); s. conc. H_2SO_4 (BGS1). — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Ca, + compl. (RVS1). — Dyeing: WCh.	**786**
Bril. red powder; e. s. aq. (red turbid); s. alc. (O–RO); s. conc. H_2SO_4 (RV–VR, v. bril.). — Ppt. tests: tannin, –; H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WA, WGACh. — Allied brands: Milling Scarlet 4RO [Mo].	**787**
RS2 powder; e. s. aq. (orange red); sl. s. alc. (RT1); s. conc. H_2SO_4 (RO bril.). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**788**
Dark red-brown powder; v. e. s. aq. (R→, ←OR and ←RT2); sl. s. alc. (←RT2); s. conc. H_2SO_4 (←RT1). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: (1) WACh.	**789**
RS2 powder; e. s. aq. (R and RT2); sl. s. alc. (RT1); s. conc. H_2SO_4 (R–VR, T1 bril.). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS.	**790**
ORS2 powder; e. s. aq. (red); alm. i. alc.; s. conc. H_2SO_4 (VRT1 bril.). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS, SS. — Allied brand: Erythrine X [B].	**791**
R powder; e. s. aq. (orange red); sl. s. alc. (red); s. conc. H_2SO_4 ((1) RO; (2) ←RO). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Spectrum: double band (aq.). — Dyeing: WGS.	**792**
OR–RO powder; e. s. aq. (←OR and RT2); s. alc. (RO); s. conc. H_2SO_4 (R–VR). — Ppt. tests: H_2SO_4, –; NaOH, – (O); Cr, Cu, + compl.; Ca, +. — Dyeing: WGS.	**793**
OR Bkn (v.D) powder; e. s. aq. (←OR, RO, RT2); sl. s. alc. (ORT); s. conc. H_2SO_4 (←RO). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Spectrum: ill defined double band (aq.). — Dyeing: WGS.	**794**
R Bkn (v.D) powder; e. s. aq. (red); sl. s. alc. (RT→); s. conc. H_2SO_4 (←RO). — Ppt. tests: tannin, –; H_2SO_4, NaOH, Cr, Cu, Ca, –. — Dyeing: WGS.	**795**
Very dark red liquid paste; turbid aq. filtrate (RT1); s. alc. (R–OR); s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (VR→); Ca, –. — Dyeing: WCh.	**796**
OR–R, S2 powder; e. s. aq. (R and RT2); s. alc. (OR); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**797**
RS2 or brownish-black paste; e. s. aq. (R and VRT2); s. alc. (VRT2); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: tannin, –; H_2SO_4, NaOH, Cr, Cu, Ca, –. — Dyeing: WGS.	**798**
RS2 powder; e. s. aq. (red and VRT); s. alc. (RT1); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, + (v. slow); Cu, –; Ca, –. — Dyeing: WGS.	**799**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T. 16). (2) H_2SO_4 (T. 13). (3) NaOH (T. 14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
800	Aft-chr. [−]. H_2SO_4...(f) ←BT1. NaOH...VRS2.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, RT1.	**FAST PONCEAU B [B].** Disazo dyestuff: amino-*azobenzene-disulphonic ac.* + β-naphthol. (1879).
801	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...R dull.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, ←R.	**BRILLIANT BORDEAUX S [A].** (Intro. 1897).
802	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...RS2.	(1) Compl. dis. (50 sec.). (2) Cotton, alm. white. (3) Wool, R–RT1 bril.	(1) **CROCEINE SCARLET 7B [By].** (2) **CROCEINE SCARLET 8B [K].** (3) **FAST PINK BB [B].** *Aminoazotoluenesulphonic ac.* + β-naphtholsulphonic ac.(8), (N_2: OH = 1 : 2). — (1881).
803	Aft-chr. [−]. H_2SO_4...(f) BT1. NaOH...OS1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, ←R.	(1) **FAST RED PR EXT. [By].** (2) **PALATINE RED A [B].** (3) **AZO RED A [C].** (4) **LANAFUCHSINE BBS [C].** (Intro. 1899).
804	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...YO Bkn.	(1) Compl. dis. (35 sec.). (2) Cotton, white. (3) Wool, ←RT1+.	**BRILLIANT CROCEINE 9B [C].** Disazo dyestuff: *1-naphthylaminedisulphonic ac. (6,8)-azo-aniline* + naphthol(2)-disulphonic ac.(3,6), (N_2 : OH = 1 : 2).—(1886).
805	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...(f) RV→.	(1) Compl. dis. (¾ min.). (2) Cotton, RT3. (3) Wool, R bril.	**FAST SCARLET F [K].**
806	Aft-chr. [−]. H_2SO_4...(f) VBS1+. NaOH...(f) VR.	(1) Compl. dis. (50 sec.). (2) Cotton, RT3–VRT3. (3) Wool, ←R.	**WOOL RED B [C].** (Intro. 1897).
807	Aft-chr. [−]. H_2SO_4...(f) ←VBS2. NaOH...(f) VR.	(1) Compl. dis. (35 sec.). (2) Cotton, ←RT3. (3) Wool, R bril.	**CROCEINE AZ [C].** Isomeric w. croceine B (sch), which is a disazo dye [*aminoazobenzene* + naphthol (1)-disulphonic ac.(4,8), (N_2 : OH = 2 : 1)].
808	Aft-chr. [−]. H_2SO_4...(f) BVS2. NaOH...ORS1.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, ←R.	**GUINEA CARMINE B [A].** (Intro. 1899).
809	Aft-chr. [−]. H_2SO_4...(f) ←BVS1. NaOH...OS1.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, RT1+ bril.	**CRYSTAL SCARLET 6R [C].**
810	Aft-chr. [−]. H_2SO_4...(f) BV Bkn (D)–gray. NaOH...V.	(1) Alm. compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←RT1+.	(1) **CROCEINE 3B [Sch.]** (2) **ONE DIP CARDINAL [K].** (1) Disazo dyestuff: *o-aminoazotoluene* + naphthol (1)-disulphonic ac. (1,8), (N_2:OH = 2 : 1).—(1)(1884).
811	Aft-chr. [−] (VRSi). H_2SO_4... (f): – (1,2), VS2→; (3), ←VS2; (4,5,6), VS1–2. NaOH...R Bkn (M).	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, R.	(1) **AMARANTH [C].** (2) " **# 107 [M].** (3) **FAST RED D EXT. [B].** (4) **BORDEAUX S [By].** (5) **NAPHTHOL RED S [By].** (6) **AMARANTHE [P].** Monazodyestuff: *naphthionic ac.* + naphthol(2)-disulphonic ac. (3,6), (N_2 : OH = 1 : 2).— (Disc. 1878).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark red powder; e. s. aq. (red); sl. s. alc. (red); s. conc. H_2SO_4 (GB). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH[,(RVS1); Cr, +; Cu, –; Ca, –. — Dyeing: WGS, SS. — Allied brands: Ponceau 3RB [A]; Ponceau B extra [M]; New Red L [K]; Scarlet EC [C]; Imperial Scarlet [By]; Old Scarlet [By]; Biebrich Scarlet [K]. [See No. 838].	**800**
R powder; e. s. aq. (red and VRT); sl. s. alc. (RT); s. conc. H_2SO_4 (←B). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**801**
Dark red-brown powder; e. s. aq. (red or orange red); s. alc. (red or orange red); s. conc. H_2SO_4 (VB). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS. — Allied brands: Croceine Scarlet 7B [RF]; Croceine Scarlet 8B [By]; Ponceau 6RB [A].	**802**
←RS2 powder; e. s. aq. (R and VRT); s. alc. (RT); s. conc. H_2SO_4 ((1) GB, (2, 3) B). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS.	**803**
Dark red powder; e. s. aq. (red); sl. s. alc. (red); s. conc. H_2SO_4 (B). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, – (red Bkn (v.D)); Cr, +; Cu, –; Ca, –. — Dyeing: WGS.	**804**
ORS2 powder; e. s. aq. (R, OR and ORT2); s. alc. (RO); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (VRS2); Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS.	**805**
Reddish-black powder; e. s. aq. (R and VRT); s. alc. (RT); s. conc. H_2SO_4 (B→). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, +; Cr, + compl.; Ca, + alm. compl.; Cu, –. — Dyeing: WGS, WGSCh.	**806**
RS2 powder; e. s. aq. (red and VRT1); s. alc. (ORT); s. conc. H_2SO_4 (BV). — Ppt. tests: tannin, –; H_2SO_4, – (OS3); NaOH, – (VRS2); Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS.	**807**
Dark broken red; sl. s. c. aq., e. s. hot aq. (R and VRT); s. alc. (ORT); s. conc. H_2SO_4 (BV–V). — Ppt. tests (made in c. saturated aq. sol.): tannin, –; H_2SO_4, + alm. compl.; NaOH, –; Cr, +; Cu, + compl.; Ca, + slow. — Dyeing: WGS.	**808**
Fine brown crystals w. green silky lustre; e. s. aq. (RT1 + and RT2); s. alc. (OR); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS.	**809**
Red-brown powder; e. s. aq. (red); s. alc. (red); s. conc. H_2SO_4 (BVS2). — Ppt. tests: tannin, –; H_2SO_4, + alm. compl.; NaOH, – (RV); Cr, +; Cu, –; Ca, –. — Dyeing: WGS.	**810**
(1) R Bkn (D), (2) ROS3, (3) ORS3, (4,5,6) RS2→ powders; e. s. aq. (R→ and VRT2); d. s. alc. ((1) RO, (2,4,5,6) ←RT2, (3) RT2); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, NaOH (RS2), Cu and Ca, all –; Cr, + alm. compl. — Spectra: (1) 13.00 (aq. or alc.); (2) 13.14 (aq.), 13.01 (alc.); (3) 13.12 (aq.), 13.08 (alc.). — Dyeing: WGS. Use as food color permitted under U.S. "Pure Food Laws." — Allied brands: Fast Reds EB [B], and NS [By]; Amaranth [BK] [F] [Lev]; Azo Acid Rubine 2B [D]; Bordeaux S [RF]; Naphthol Red O [M]; Victoria Rubine [M] [Bk]; Wool Red Extra [K]; Acid Crimson [H]; Azo Rubine S [S]; Bordeaux [PL]; Raspberry Red Ext. [Fritzsche].	**811**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
812	Aft-chr. [−]. H_2SO_4, RV; (f) V. NaOH...R.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, R.	**MILLING RED 6BA [A].**
813	Aft-chr. [−]. H_2SO_4...(f) VS1. NaOH...OS1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, RT1→.	**BRILLIANT COCHINEAL 4R [C].** Belonging to same group as Palatine Scarlet (B).
814	Aft-chr. [−]. H_2SO_4...RVS1→. NaOH...RO→ sl. dull.	(1) Compl. dis. (25 sec). (2) Cotton, white. (3) Wool, RT1 bril.	**GRAPHITOL RED 8B [O].**
815	Aft-chr. [−]. H_2SO_4...RVS1. NaOH...O Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, RT1.	**SCARLET 6R [M].**
			SECTION OF ORANGE-RED
816	Aft-chr. [+] RV Bkn (D). H_2SO_4...←RT1+. NaOH...ORS1.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ORT1 dull.	**ANTHRACENE CHROME VIOLET B [C].**
817	Aft-chr. [+] Y Bkn (v.D). H_2SO_4...RT1+→. NaOH...ORS1.	(1) Compl. dis. (1 min.). (2) Cotton, pale W. gray (3) Wool, ORS1.	**META CHROME BROWN B PASTE [A].** (Intro. 1900).
818	Aft-chr. [+] BV Bkn (L). H_2SO_4...←RT1. NaOH...ROT1+.	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, ORT1.	**DOUBLE SCARLET EXT. S [A].** Monazo dyestuff: *2-naphthylamine-sulphonic* ac.(6) + naphthol(1)- sulphonic ac.(4), (N_2 : OH = 2 : 1).
819	Aft-chr. [+] OR Bkn (D). H_2SO_4...OR. NaOH...VR–R dull.	(1) YOT2 − dis. (½ min., sol. pale yel.). (2) Cotton, ORT3 −. (3) Wool, ORT1 −	**PURPURINE PASTE [B].** Trioxyanthraquinone. (Isolated 1826).
820	Aft-chr. [+] YO Bkn (v.D). H_2SO_4...(f) VBS1. NaOH...VRS2.	(1) Dis. (¾ min.). (2) Cotton, VRT4 dull. (3) Wool, ORS1→.	**FAST BROWN 3B [A].** Monazo dyestuff: *2-naphthylamine-sulphonic ac.*(6) + α-naphthol (N_2 : OH = 4 : 1). — (1882).
821	Aft-chr. [−] OR–ORS1. H_2SO_4...(f) VRS1. NaOH...OR→.	(1) Compl. dis. (½ min., sl. yel. sol.). (2) Cotton, white. (3) Wool, OR bril.	**PALATINE SCARLET 3R [B].**
822	Aft-chr. [−]. H_2SO_4...(f) VRS1→. NaOH...OR→.	(1) Compl. dis. (1 min.) (2) Cotton, alm. white (RT4). (3) Wool, OR→ bril.	**MILLING RED G [C].** Disazo dyestuff: probably *thioaniline* + 2 mol. naphthol(2)sulphonic ac.(6), (N_2 : OH = 1 : 2). — (Intro. 1893).
823	Aft-chr. [−]. H_2SO_4...VRS2. NaOH...(f) OR→ Bkn (D).	(1) Alm. compl. dis. (½ min.). (2) Cotton, white. (3) Wool, OR.	(1) **BRILLIANT CROCEINE MOO [C].** (2) **COCHINEAL RED RR [B].**
824	Aft-chr. [−]. H_2SO_4...VR–VRS1. NaOH...←OS2.	(1) V. pale yel. dis. (½ min.). (2) Cotton, white. (3) Wool, OR.	**CROCEINE SCARLET 3BX [By].** Monazo dyestuff: *naphthionic ac.* + 2-naphtholsulphonic ac.(8), (N_2 : OH = 1 : 2). — (1882).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
R→ powder; e. s. aq. (R and VRT, turbid); s. alc. (OR); s. conc. H_2SO_4 (RV–VR). — Ppt. tests: tannin, –; H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WGS.	**812**
RS2 powder; e. s. aq. (red); s. alc. (RO); s. conc. H_2SO_4 (←RV). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –, Cr, –; Cu, –; Ca, –. — Dyeing: WG.	**813**
RS1 powder; e. s. aq. (R, ←OR and RT2); s. alc. (RO); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + alm. compl.; Cu, + compl.; Ca, –.	**814**
Dark Bkn orange powder; e. s. aq.; i. s. alc.; s. conc. H_2SO_4 (RV). — Ppt. tests: tannin, –; H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS, SS.	**815**
COLORS ON WOOL.	
RO Bkn (D) powder; s. aq. (RO and ROT2); e. s. alc. (O); s. conc. H_2SO_4 (VR–R, bril.). — Ppt. tests: H_2SO_4 +, compl. (O); NaOH, –; Cr, + compl.; Cu, ±; Ca, ±. — Dyeing: WCh.	**816**
Dark brown-gray paste; aq. filtrate (ROS1 and ROT2); s. NaOH (ROS1 and ROT2); s. alc. (OR, O and YOT2); s. conc. H_2SO_4 (←RT1). — Ppt. tests: H_2SO_4, + compl. (YO Bkn (v.D); Cr, + (dark purple); Cu, + (dark brown) compl.; Cr, + compl. (dark brown). — Dyeing: WCh.	**817**
ORS2 powder; e. s. aq. (RO and ORT2); s. alc. (RO); s. conc. H_2SO_4 (VR – R, bril.). — Ppt. tests: H_2SO_4, –; Cr, + (O); Cu, –; Ca, –. — Dyeing: WGS. – Allied brands: Double Scarlet Ext. S [Lev]; Scarlet 3R [By]; Bril. Ponceau 4R [By]; Double Scarlet 2R [t.M].	**818**
OS1 powder; i. aq.; s. alc. (←OYT1); s. conc. H_2SO_4 (R and OR); s. NaOH (VRT1). — Dyeing: C Al; C Ch. — Allied brands: Purpurine Paste [By] [BACo]; Alizarine No. 6 [M].	**819**
Black powder; e. s. aq. (R dull and OR Bkn (L)); s. alc. (OR→, dull); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, – (R Bkn); Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS.	**820**
RS2 powder; v. e. s. aq. (←OR and ORT2); s. alc. (←O); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, –; Cr, – or ±; Cu, –; Ca, –. — Dyeing: WGS.	**821**
ORS2 powder; e. s. aq. (OR, O and OT2); sl. s. alc. (O); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, –; Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS.	**822**
ORS1 powder; e. s. aq. (OR and ←O and ORT2); s. alc. (RO→); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, –; Cr, + or ±; Cu, –; Ca, –. — Dyeing: WGS.	**823**
ORS1 powder; e. s. aq. (OR and RO→ and ←ORT2); s. alc. (OR); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS. — Allied brands: Croceine Scarlet [K]; Croceine 2B [A]; Scarlet 000 [H].	**824**

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
825	Aft-chr. [−] (OR). H_2SO_4...(f) VR–R. NaOH...OS2.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, OR.	**FAST SCARLET 50 [H].**
826	Aft-chr. [−]; (3) [−] (R). H_2SO_4...VR–R. NaOH...YO Bkn (M–D).	(1) Compl. dis. (¾ min.) pale yel. sol. (2) Cotton, white. (3) Wool, OR.	(1) **COCHINEAL RED 3R [B].** (2) **NEW COCCINE [A].** (3) **NEW COCCINE [Lev].** (4) **VICTORIA SCARLET 3R [M].** (5) **BRILLIANT SCARLET 4R [C].** — ((2, 3) 1878).
827	Aft-chr. [−]. H_2SO_4...←R. NaOH...R→.	(1) Compl. dis. (½ min.). (2) Cotton, alm. white. (3) Wool, OR bril.	**MERCERINE WOOL SCARLET B [H].**
828	Aft-chr. [−]. H_2SO_4...←RS1. NaOH...R.	(1) Compl. dis. (1¼ min.). (2) Cotton, white. (3) Wool, OR bril.	**ACID ANTHRACENE RED G [By].** (Intro. 1903).
829	Aft-chr. [−]. H_2SO_4...←RS1. NaOH...R dull.	(1) OYT4 dis. (2) Cotton, alm. white. (3) Wool, ←—OR.	**ACID ANTHRACENE RED 5BL [By].**
830	Aft-chr. [−]. H_2SO_4...RS2. NaOH...OS1.	(1) Compl. dis. (¾ min.). (2) Cotton, alm. white. (3) Wool, OR–RO.	**PALATINE SCARLET R [B].**
831	Aft-chr. [−] (R). H_2SO_4...(f) R. NaOH...O.	(1) Compl. dis. (25 sec.). (2) Cotton, ORT3+. (3) Wool, OR bril.	**SORBIN RED G [B].**
833	Aft-chr. [−]. H_2SO_4...OR–R. NaOH...←RO, dull.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←OR.	(1) **PONCEAU 3R [A].** (2) **PONCEAU F2R [C].** (3) **PONCEAU 4R [A].** (4) **SCARLET 4R No. 56 [M].** (1,3,4) Monazo dyestuff: *1,2,4-trimethyl-5-aminobenzene* + naphthol (1)-disulphonic ac.(3,6). — (Disc. 1878).
834	Aft-chr. [−]. H_2SO_4...OR. NaOH...RO dull.	(1) Compl. dis. (¾ min., sol. pale yel. T). (2) Cotton, alm. white. (3) Wool, OR→ bril.	(1) **PONCEAU 2R [A].** (2) **SCARLET FR [C].** Monazo dyestuff: commercial *xylidine* + naphthol(2)-disulphonic ac. (3,6), (N_2 : OH = 1 : 2). —(1878).
835	Aft-chr. [−]. H_2SO_4...←OR. NaOH...O→ dull.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, OR.	(1) **LAKE SCARLET 3R [C].** (2) **SCARLET F3R [C].**
836	Aft-chr. [−]. H_2SO_4...ORT1→ dull. NaOH...YOT1→.	(1) Compl. dis. (¼ min.). (2) Cotton, white. (3) Wool, ORT2+.	**PONCEAU HP [By].**
837	Aft-chr. [−]. H_2SO_4...RO. NaOH...O–RO, S1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, ←ORT1+.	**AZO CORALLINE [D].** Monazo dyestuff: *p-aminoacetanilide* + 2-naphtholdisulphonic ac.(3,6), (N_2 : OH = 1 : 2). — (1884).
838	Aft-chr. [−]. H_2SO_4...(f) ←BG. NaOH...(f) VR Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, VRT3 v. bril. (3) Wool, OR *bril.*	(1) **PONCEAU 3RB EXT. [A].** (2) **SCARLET EC [C].** (3) **PONCEAU 3RB [A].** Disazo dyestuff: *aminoazobenzene-disulphonic ac.*(NH_2 : N_2 : SO_3H : SO_3H = 1 : 4 : 2 : 4) + *β*-naphthol, (N_2 : OH = 1 : 2). — (1879).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
R powder; e. s. aq. (←OR, RO and ORT2); s. alc. (RT1); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, NaOH, Cu, Ca, –; Cr, ±.	**825**
R powder; e. s. aq. (OR and RO and ←ORT2); s. alc. (R–OR, T2); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS. — Allied brands: New Coccine [M] [RF]; Cochineal Red A [B]; Croceine Scarlet 4BX [K]; Bril. Scarlet [Lev]; Bril. Ponceau 5R [C] [By] [D]; Penceau Bril. 4R [MLy]; Scarlet 00000 [H]. — [Monazo dyestuff: *naphthionic ac.* + 2-naphthol-6,8-disulphonic ac. [$N_2 : OH = 1 : 2$]].	**826**
R→ bril. powder; s. aq. (OR→ and ORT2); s. alc. (←O and ORT2); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, +; Cr, + compl.; Cu, +; Ca, +. — Dyeing: WGS.	**827**
OR→ powder; e. s. aq. (OR, ←O and ROT2); s. alc. (←YO); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, + compl. (R); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WGSCh.	**828**
RS2 powder; w. metallic green lustre; e. s. aq. (R→, RO and ORT2); alm. i. alc.; s. H_2SO_4 (R–VR). — Ppt. tests: H_2SO_4, Cu, – ; NaOH, Ca, ±; Cr, + compl. — Dyeing: WGSCh.	**829**
ORS2 powder; e. s. aq. (←OR, ←RO and RT2); s. alc. (O); s. conc. H_2SO_4 (←R). — Ppt. tests: H_2SO_4, –; Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**830**
R→ powder; e. s. aq. (←OR and ORT2); e. s. alc. (RO); s. conc. H_2SO_4 (VR–R). — Ppt. tests: H_2SO_4, NaOH (O), Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**831**
OR to O (normal to S1 tones) powders; e. s. aq. ((1,3) OR and RT2; (4) OR and ←ORT2); sl. s. alc. (O and ROT2); s. conc. H_2SO_4 (OR and RT2). — Ppt. tests: tannin, –; H_2SO_4 –; NaOH, –; Cr, + alm. compl.; Cu, –; Ca, –. — Spectrum: (1). 12.10, 14.48 (aq.); 12.29, 14.52 (alc.). (3). 11.96, 14.28 (aq.); 12.21, 14.52 (alc.). (4). 12.06, 14.43 (aq.); 12.32, 14.57 (alc.). The absorption appears as a "double band." — Dyeing: WGS, SS. Food color whose use is permitted by U. S. "Pure Food Law." — Allied brands: Ponceau 3R, [B] [M]; Ponceau 4R [A]; Cumidine Red; Cumidine Ponceau; Strawberry Red Ext. [Fritzsche].	**833**
OR–R bril. powder; e. s. aq. (←OR, RO→ and ORT2); s. alc. (O→); s. conc. H_2SO_4 (OR→ and RT2→). — Ppt. tests: H_2SO_4, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS, SS. — Allied brands: Ponceau 2R [B] [Lev] [M] [P] [S]; Ponceau G [Lev] [M]; Ponceau GR [M]; Ponceau R [M] [A]; Bril. Ponceau G [C]; Ponceau J [M] [Ly]; Xylidine Scarlet [M]; Scarlet 2R [H].	**834**
R→ bril. powder; e. s. aq. (←OR, RO→ and ORT2); s. alc. (←O); s. conc. H_2SO_4 (OR and ←RT2). — Ppt. tests: H_2SO_4, –; Cr, +; Cu, –; Ca, –. — Dyeing: WGS, CAl.	**835**
OR bril. powder; s. aq. (OR→, ←RO and RT2→); s. alc. (RO→); s. conc. H_2SO_4 (←RT1). — Ppt. tests: H_2SO_4, – (redder); Cr, +; Cu, + (O dull); Ca, ± (ORT1). — Dyeing: WGS.	**836**
R Bkn (D) powder; s. aq. (R→, RO and RT2→); sl. s. alc. (ORT1); s. conc. H_2SO_4 (RO→ and RT2). — Ppt. tests: H_2SO_4, –; Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS.	**837**
(1) Dark brown, (2, 3) RS2→, powder; s. aq. (R→, ←RO and ORT2); s. alc. (RO→); s. conc. H_2SO_4 (G–BG, S1). — Ppt. tests: H_2SO_4, –; NaOH, +; Cr, + compl.; Cu, –; Ca, +. — Dyeing: WGS, SS. — Allied Brands: Ponceau B Ext. (M); Fast Ponceau B [B]; New Red L [K]; Imperial Scarlet [By]; Old Scarlet [By]; Eclaté [P]; Biebrich Scarlet [K].	**838**

No.	**COORDINATION TESTS.** (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
839	Aft-chr. [−]. H_2SO_4...(f) BGS1. NaOH...ORT1.	(1) Alm. compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ORT1–2.	(1) **FAST PONCEAU [M].** (2) **FAT PONCEAU [M].** Disazo dyestuff: *aminoazotoluene* + *β*-naphthol, (N_2 : OH = 1 : 2).
840	Aft-chr. [−] ←OR. H_2SO_4 ...(f)← BG. NaOH...(f) RVS1.	(1) Compl. dis. (1 min.). (2) Cotton, ←RT3. (3) Wool, OR.	**AZO BENZOLE FAST CRIMSON R EXT. [B].**
841	Aft-chr. [−]. H_2SO_4...(f) BS2. NaOH...(f) RV Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, OR bril.	**PONCEAU 4RB [A].** *p-amino-azobenzene-p′-sulphonic ac.* + naphthol(2)-sulphonic ac.(8), (N_2 : OH = 1 : 2). — (1881).
842	Aft-chr. [−]. H_2SO_4...(f) BS1. NaOH...RVS2.	(1) Compl. dis. (¾ min.). (2) Cotton, RT3−. (3) Wool, OR.	(1) **FAST SCARLET B [K].** (2) **NEW SCARLET 5G [By].** (1) Disazo dyestuff: *p-aminoazobenzene-p′-sulphonic ac.* + naphthol (2)-sulphonic ac.(6), (N_2 : OH = 1 : 2). — (1879).
843	Aft-chr. [−]. H_2SO_4...(f) VBS1→. NaOH...OS1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, OR.	(1) **CRYSTAL PONCEAU [B].** (2) **COCHINEAL RED B [B].** (1) Monazo dyestuff: *α-naphthylamine* + naphthol(2)-disulphonic ac.(6,8), (N_2 : OH = 1 : 2). — (1883).
844	Aft-chr. [−] VR–R, S1. H_2SO_4...(f) VS1. NaOH...R.	(1) Compl. dis. (1 min.). (2) Cotton, VRT3. (3) Wool, OR–R bril.	(1) **GRENAT pour IMPRESSION [P].** (2) **MILLING RED E [SS].** (3) **FAST RED R [B].**
845	Aft-chr. [−]. H_2SO_4...RVS2. NaOH...OR Bkn.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, OR−.	**BRILLIANT CROCEINE SCARLET 3BX EXT. [K].**
846	Aft-chr. [−] RT1+. H_2SO_4...RV Bkn (D). NaOH...YOS2.	(1) Good dis. (½ min.). (2) Cotton, white. (3) Wool, OR−.	**PONCEAU 6R [B].** Monazo dyestuff: *naphthionic ac.* + naphthol(2)-trisulphonic ac.(3,6,8), (N_2 : OH = 1 : 2). — (1881).
			SECTION OF RED-ORANGE
848	Aft-chr. [+] RT1. H_2SO_4...RO. NaOH...O–YO.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, RO–O.	**ACID ALIZARINE RED B [M].** (Intro. 1902).
849	Aft-chr. [+] O Bkn (D). H_2SO_4...(f) BS1. NaOH...(f) VRS2.	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, RO sl. dull.	**NAPHTHYLAMINE BROWN [B].** Monazo dyestuff: *naphthionic ac.* + *α*-naphthol, (N_2 : OH = 4 : 1).
850	Aft-chr. [+] VRS2 dull. H_2SO_4...(f) BV. NaOH...(f) VS2.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, ROS1.	**META CHROME BORDEAUX R [A].**
852	Aft-chr. [−]. H_2SO_4...(f) VR. NaOH...(f)R Bkn(v.D).	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, RO bril.	**BRILLIANT CROCEINE 3B [By].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark brown greasy mass; alm. i. aq.; sl. s. alc. (RT2→); s. conc. H_2SO_4 (BG→). — Dyeing: (A fat color). — Allied brands: Fat Ponceau M [K]; Fast Azo Grenat [M]; Red B, ext. conc., fat soluble [F].	**839**
RS2 powder; e. s. aq. (R, OR and ORT2); s. alc. (←OR); s. conc. H_2SO_4 (BG–G). — Ppt. tests: H_2SO_4 and Cu, –; NaOH, + compl. (RV Bkn (D)); Cr, + compl.; Ca, + filiform ppt. — Dyeing: WGS.	**840**
Brown powder; e. s. aq. (←OR, ←O and ORT2); s. alc. (←O); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (RT1); Cr, – or ±; Cu, –; Ca, –. — Dyeing: WGS, SS. — Allied brands: Croceine Scarlet 3B [By] [K].	**841**
Reddish-brown powder; e. s. aq. (R→, OR→ and RT2); s. alc. (RO→); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, – (VRT1); Cr, +, compl.; Cu, –; Ca, –. — Dyeing: WGS.	**842**
Lustrous brassy dark Y crystalline scales; e. s. aq. (R→, OR→ and RT2→); s. alc. (RO); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, –; NaOH, – (R and dull O); Cr, +; Cu, –; Ca, –. — Dyeing: WGS. — Allied brands: Crystal Ponceau [A]; Crystal Ponceau 6R [C] [M].	**843**
(1) OR Bkn (v.D), (2) ORS1+, (3) ORS2, powder; e. s. aq. (OR–RO and ORT2); s. alc. (RO); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, (1) – or ±, (2) – (←YO dull), (3) – (RO dull); Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS.	**844**
ORS2 powder; e. s. aq. (←OR, RO→ and RT2→); s. alc. (RO); s. conc. H_2SO_4 (RV–VR). — Ppt. tests: H_2SO_4, –; NaOH, – (ORS1 and ORT2); Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**845**
Brown powder; e. s. aq. (R→, ←OR and RT2); alm. i. alc.; s. conc. H_2SO_4 (←RVT1). — Ppt. tests: H_2SO_4, –; NaOH, – (ROS1 and OT2 dull); Cr, –; Cu, –; Ca, –. — Allied brands: Ponceau 6R [M]. — Dyeing: WGS, SS.	**846**
COLORS ON WOOL.	
R powder; e. s. aq. (O, ←YO and OT2); sl. s. alc. (OT2+); s. conc. H_2SO_4 (RO–O bril.). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + alm. compl.; Cu, –; Ca, –. — Dyeing: WGSCh.	**848**
Brown-black powder; e. s. aq. (O and YOT2); s. alc. (OY); s. conc. H_2SO_4 (BT1). — Ppt. tests: H_2SO_4, ± (YOS1); Cr, + compl.; Cu, ±; Ca, + compl. — Dyeing: WGS. — Allied brands: Fast Brown N [B]; Azo Brown O [M]; Chrome Brown RO [M].	**849**
Dark Bkn-red paste; e. s. aq. (ORS2, O sl. dull and OT2); s. alc. (←ORS1, OS1 and ROT2); s. conc. H_2SO_4 (VB→). — Ppt. tests: H_2SO_4, + alm. compl.; NaOH, – (VRS2); Cr, + alm. compl.; Cu, + compl.; Ca, + compl.	**850**
OR powder; e. s. aq. (OR, RO and ROT2); s. alc. (RO); s. conc. H_2SO_4 (VR bril.). — Ppt. tests: H_2SO_4, –; NaOH, – (v. dark OR); Cr, +; Cu, –; Ca, –. — Dyeing: WGS, SS.	**852**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
853	Aft-chr. [−]. H_2SO_4...VR-R. NaOH...OR→.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, RO.	**MILLING RED 4BA [A].**
854	Aft-chr. [−]. H_2SO_4...VR-R. NaOH...RO-OR.	(1) Compl. dis. (20 sec.). (2) Cotton, alm. white. (3) Wool, RO.	**ACID ANTHRACENE RED 3B [By].**
855	Aft-chr. [−]. H_2SO_4...R-VR, T1. NaOH...RT1→sl. dull.	(1) Compl. dis. (¼ min.). (2) Cotton, white. (3) Wool, RO.	**GRAPHITOL RED R [O].**
856	Aft-chr. [−]. H_2SO_4...←RS1. NaOH...←OR sl. dull.	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, RO bril.	**MILLING RED GA [A].**
857	Aft-chr. [−]. H_2SO_4...←RS1. NaOH...ORS2.	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, RO bril.	**ORANGE R [C].** Azo dyestuff: *1-methyl-2-aminobenzene sulphonic ac.(5)* + naphthol(2), (N_2 = 1).
858	Aft-chr. [−]. H_2SO_4...RS1. NaOH...OS1→.	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, ←RO.	**BRILLIANT COCHINEAL 2R [C].**
859	Aft-chr. [−] OR. H_2SO_4...R. NaOH...O.	(1) Compl. dis. (25 sec.). (2) Cotton, ORT3. (3) Wool, ←RO.	**XL SCARLET [H].**
860	Aft-chr. [−]RO sl. dull. H_2SO_4...R. NaOH...OS1.	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, RO-O.	**SCARLET LR [B].**
861	Aft-chr. [−]. H_2SO_4...OR. NaOH...OR-RO.	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, RO v. bril.	**BRILLIANT ORANGE R [M].**
862	Aft-chr. [−]. H_2SO_4...OR. NaOH...RO.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, RO bril.	(1) **SCARLET R [M].** (2) " **2R (M).**
863	Aft-chr. [−]. H_2SO_4...OR. NaOH...RO sl. dull.	(1) Compl. dis. (¼ min.). (2) Cotton, white. (3) Wool, RO-O.	**GRAPHITOL RED BB [O].**
864	Aft-chr. [−]. H_2SO_4...O. NaOH...RO.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, RO-O bril.	**EXCELSIOR LAKE SCARLET JN [C].**
865	Aft-chr. [−] O-YO Bkn (L). H_2SO_4...O. NaOH...RO.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, RO bril.	**BIEBRICH ACID RED 3G [K].** Azo dyestuff derived from naphthalene peridioxysulphonic ac. K.
			SECTION OF ORANGE
			ORANGE I [M].
866	Aft-chr. [+] ROS1. H_2SO_4...←VR. NaOH...←OS1.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, O bril.	**ORANGE T [P].**
867	Aft-chr. [+] RT1. H_2SO_4...RO. NaOH...O-OS1.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, ←O.	**PALATINE CHROME RED B [B].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
ORS1 powder; e. s. aq. (turbid, ←OR and RT2); s. alc. (RO); s. conc. H_2SO_4 (VR bril.). — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, +; Ca, +. — Dyeing: WGS.	**853**
OR powder; e. s. aq. (←OR and ORT2); s. alc. (RO); s. conc. H_2SO_4 (VR–RV). — Ppt. tests: H_2SO_4, + compl. (←R); NaOH, +; Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WGSCh.	**854**
ORS2 powder; e. s. aq. (OR, ←RO and ORT2); sl. s. alc. (OT1 +); s. conc. H_2SO_4 (VR–RT1 v. bril.). — Ppt. tests: H_2SO_4, –; NaOH, – (RS1); Cr, + alm. compl.; Cu, –; Ca, –.	**855**
OR powder; e. s. aq. (turbid OR, RO and ROT2); s. alc. (O); s. conc. H_2SO_4 (VR+bril.). — Ppt. tests: H_2SO_4, ±; NaOH, –; Cr, +; Cu, –; Ca, ±. — Dyeing: WGS.	**856**
OR powder; e. s. aq. (RO, O and OT2); s. alc. (O→); s. conc. H_2SO_4 (VRT1 +). — Ppt. tests: H_2SO_4, –; NaOH, – (R→); Cr, + compl.; Cu, –; Ca, + compl. — Dyeing: WGS. — Allied brands: Orange R [DH] [I] [t.M]; Orange T [K]; Kermesin Orange [L].	**857**
ORS2 powder; e. s. aq. (OR, RO and ORT2); s. alc. (RO); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, –; Cu, –; Ca, –. — Dyeing: WG.	**858**
OR powder; e. s. aq. (OR, RO and ORT2); s. alc. (RO); s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4, + compl.; NaOH, – ; Cr, + compl.; Cu, + compl.; Ca, ±. — Dyeing: WGS.	**859**
←OR powder; e. s. aq. (OR, RO and ROT2); s. alc. (O and YO); s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + alm. compl.; Cu, –; Ca, –. — Dyeing: WGS.	**860**
Bril. OR powder; e. s. aq. (OR, O and OT2); s. alc. (O); s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + alm. compl.; Cu, –; Ca, +. — Dyeing: WGS, SS.	**861**
Bright ←OR powder; e. s. aq. (OR, RO and ORT2); s. alc. (O); s. conc. H_2SO_4 ((1) OR–RO; (2) RT2 + bril.). — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, + compl.; Cu, –; Ca, –. — Dyeing: WGS, SS.	**862**
OR–RO, S1 powder; e. s. aq. (RO, O and OT2); s. alc. (O); s. conc. H_2SO_4 (RO–OR). — Ppt. tests: H_2SO_4, –; NaOH, – (R); Cr, + alm. compl.; Cu, –; Ca, –.	**863**
OR bril. powder; e. s. aq. (RO, O and ROT2); s. alc. (O–YO, T1); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, –; NaOH, – (OR); Cr, + alm. compl.; Cu, –; Ca, –. — Dyeing: WGS.	**864**
ORS2 powder; e. s. aq. (RO, O and OT2); s. alc. (OR); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, –; NaOH, – (R→); Cr, –; Cu, –; Ca, –. — Dyeing: WGS.	**865**
COLORS ON WOOL.	
For description see No. 871-1.	
RS1 powder; e. s. aq. (OR, YO and YOT2); s. alc. (O→); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, ±; NaOH, – (R); Cr, +; Cu and Ca, –. — Dyeing: WGS.	**866**
R→ powder; e. s. aq. (RO, O and OT2); alm. i. alc.; s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WGSCh.	**867**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
868	Aft-chr. [+] GY Bkn (v.D). H_2SO_4...OS1. NaOH...ORS2.	(1) Compl. dis. (¾ min.). (2) Cotton, alm. white. (3) Wool, O–YO, S1–2.	**META CHROME OLIVE BROWN G [A].**
869	Aft-chr. [+] YO Bkn (D–M). H_2SO_4....YO–O, S1. NaOH...R→.	(1) Compl. dis. (½ min.). (2) Cotton, YO–O, S1. (3) Wool, O–YO sl. dull.	**ANTHRACENE CHROME BROWN SWN [C].**
870	Aft-chr. [+] OR Bkn (D). H_2SO_4...(f) VB. NaOH...R.	(1) Compl. dis. (1 min.); air ret., pale reddish. (2) Cotton, OT4. (3) Wool, OS1+→.	**DOMINGO ALIZARINE BROWN G [L].**
871	Aft-chr. [+] YO Bkn (M). H_2SO_4...N gray (D). NaOH...OS1.	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, O–YO dull.	**SULFAMINE BROWN B [D].** (Action of β-diazonaphthalene on bisulphite comp. of nitroso-β-naphthol). — (1894).
871-1	Aft-chr. [−] ROS1. H_2SO_4...VR. NaOH...R.	(1) Compl. dis. (½ min.). (2) Cotton, alm. white. (3) Wool, O bril.	(1) **ORANGE I [M].** (2) **ORANGE YELLOW EXT.** [Fritzsche]. Monazo dyestuff: *sulphanilic ac.* +α-naphthol, (N_2 : HO = 4 : 1). (Disc. 1876).
872	Aft-chr. [−]. H_2SO_4...←R+. NaOH...ORS1–2.	(1) Compl. dis. (abt. 1 min.). (2) Cotton, white. (3) Wool, O v. bril.	(1) **ORANGE EXT. [C].** (2) **GOLD ORANGE [By].** (3) **MANDARIN G EXT. [A].** (4) **ORANGE Y [M].** (5) **ORANGE A EXT. [B].** (2, 3) Monazo dyestuff: *sulphanilic ac.* + β-naphthol, (N_2 : OH = 1 : 2). — (1876).
873	Aft-chr. [−]. H_2SO_4...(1),←R+; (2), ←R+. NaOH...ORS1.	(1) Compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, O bril.	(1) **VICTORIA SCARLET R [M.]** (2) **ORANGE R [By].**
874	Aft-chr. [−]. H_2SO_4...←R. NaOH...OR–ORS1.	(1) Compl. dis. (1½ min.). (2) Cotton, alm. white. (3) Wool, O v. bril.	**SULPHON ORANGE G [By].**
875	Aft-chr. [−]. H_2SO_4...OR. NaOH...OR.	(1) Compl. dis. (1 min.+). (2) Cotton, alm. white. (3) Wool, O v. bril.	(1) **PONCEAU 2G [M].** (2) **BRILLIANT ORANGE O [M].** (3) **ORANGE FNZ [C].** (4) **CHROME ORANGE POWDER [By].** (5) **BRILLIANT SCARLET GG [C].** (1) Monazo dyestuff. See opposite page. — ((1) 1878).
876	Aft-chr. [−] O. H_2SO_4...RO. NaOH...OR–ORS1.	(1) Compl. dis. (25 sec.). (2) Cotton, ROT4. (3) Wool, O–YO bril.	**CHROME ORANGE PASTE [By].**
877	Aft-chr. [−] OS1. H_2SO_4...O–RO. NaOH...←OR.	(1) Compl. dis. (45 sec.). (2) Cotton, alm. white. (3) Wool, O→ bril.	(1) **BRILLIANT ORANGE G [M].** (2) **CROCEINE ORANGE [K].** Monazo dyestuff, *aniline* + naphthol(2)-sulphonic ac.(6). — (1878).
878	Aft-chr. [−] OS1→. H_2SO_4...(f) RVS2–black. NaOH...YO–O.	(1) Compl. dis. (1½ min.). (2) Cotton, YT3. (3) Wool, O–YO bril.	**NEW YELLOW Ext. Conc. [By].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark brown paste w. phenolic odor; e. s. aq. (R and VRT2); e. s. alc. (R); s. conc. H_2SO_4 (OR sl. dull). — Ppt. tests: H_2SO_4, + (OR); NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WCh.	**868**
V. dark brown powder; e. s. aq. (turbid ORS2, YO and YOT2→); s. alc. (OS1, OY and OYT2); s. conc. H_2SO_4 (O→). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl., (Cu (←R)); NaOH and Ca, –. — Dyeing: WCh.	**869**
Brownish-black powder; e. s. aq. (ORS2, YO and YOT2); e. s. alc. (←ROS1, OY and ←YT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, Cu and Ca, all –; NaOH, – (R); Cr, +. — Dyeing: WGSCh.	**870**
RS2 powder; e. s. aq. (turbid ORS3, YO and OYT2); e. s. alc. (OS1 and OYT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Ca, –; NaOH, + alm. compl.; Cr, +; Cu, ±. — Allied brands: Brun Naphtine β [P]. — Dyeing: WCh.	**871**
(1) R Bkn (D), (2) ORS2, powders; e. s. aq. (OR and YOT2); s. alc. (O and OYT2); s. conc. H_2SO_4 (VR–RV). — Ppt. tests: H_2SO_4, (1) + (opaque dark brown), (2) ± (ORS2); NaOH, –(R); Cr, +; Cu and Ca, –(OR→). — Spectrum: (1) 15.70 (aq.), 16.07 (alc.); (2) 15.73 (aq.), 16.07 (alc.); broad absorption bands. — Dyeing: WGS, SS. The use of colors having this composition in food is permitted by the U. S. "Pure Food Law." — Allied brands: Orange I [By] [DH] [K] [RD] [t.M]; Naphthol Orange [A]; Tropæoline 000 No. 1; Orange B [L]; Orange R Ext. [Mo]; Alphanaphthol Orange.	**871–1**
(1, 2, 5) RO, (3, 4) O, powders; e. s. aq. (RO, YO and YOT2); e. s. alc. (O→); s. conc. H_2SO_4 (←R). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; NaOH, –(R→); Cr, +. — Allied brands (for 2 and 3): Orange II [B] [DH] [F] [I] [K] [Lev] [M] [t.M] [O]; Orange No. 2 [P]; Orange A [L]; Orange G [H]; Acid Orange [G]; Atlas Orange [BrS]; β-Naphthol Orange; Tropaoline 000 No. 2; Gold Orange [D]. — Dyeing: WGS.	**872**
OR powder; e. s. aq. (RO–OR and (1), ROT2, (2) OT2); s. alc. (←YO); s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS, SS.	**873**
ORS1 + powder; e. s. aq. (OR, YO and YOT2); e. s. alc. (O→); s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, –; Cu and Ca, ±. — Dyeing: WGS.	**874**
OR–O powder; e. s. aq. (OR→, O, OT2→); s. alc. (O→); s. conc. H_2SO_4 (OR). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Allied brands: (1), Ponceau 2G [A] [B] [BK]; Brilliant Ponceau GG [C]; Orange R [H]. — (2), Orange [t.M]; Orange GT [By]; Orange RN [C]; Orange N [K]. — [(1) *Aniline* + naphthol (1)-disulphonic ac.(3,6), (N_2 = 1). (2), Commercial *toluidine* + naphthol (2)-sulphonic ac.(3,6), (N_2 = 1).] — Dyeing: WGS.	**875**
Orange paste; sl. s. c., e. s. h. aq. (OR, YO and YOT2); e. s NaOH (R and YOT2 filtrate); sl. s. alc. (YO); s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, –; NaOH, – (R); Cr and Ca, + alm. compl.; Cu, ±. — Dyeing: WCh.	**876**
Bril. RO→ powder; e. s. aq. (O, YO, YOT2); e. s. alc. (O–YO); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, NaOH (RO), Cu, and Ca, all –; Cr, +. — Allied brands: Ponceau 4GB [A]; Croceine Orange [BY] [Lev]; Orange GRX [B]; Pyrotine Orange [D]; Orange ENL [C]. — Dyeing: WGS, SS.	**877**
YO powder; e. s. aq. (YO, Y and YT2); s. alc. (YO); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, + (VR); NaOH, Cr, Cu and Ca, all +. — Dyeing: WGS. — ["*New Yellow* [By]" is said to be identical with Orange IV [B] [M] [P] [t.M] etc.]	**878**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
879	Aft-chr. [−] YOS1-2. H_2SO_4...(f) ←RVS2. NaOH...O.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, O→.	**FAST CHROME BROWN G [Bs].**
			SECTION OF YELLOW-ORANGE
880	Aft-chr. [+] BV Bkn (D). H_2SO_4...←R. NaOH...R.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, YO.	**FAST CHROME BLUE DB [Bs].**
881	Aft-chr. [+] R Bkn (D). H_2SO_4...RT1. NaOH...OS1.	(1) Compl. dis. (½ min.). (2) Cotton, alm. white. (3) Wool, YOS1.	**ACID ANTHRACENE BROWN RH EXT. [By].**
882	Aft-chr. [+] R Bkn (D). H_2SO_4...O Bkn (v.D). NaOH...OS1.	(1) Compl. dis. (½ min.). (2) Cotton, alm. white. (3) Wool, YO sl. dull.	**PALATINE CHROME BROWN WR [PK].**
883	Aft-chr. [+] OR. H_2SO_4...O. NaOH...OY.	(1) Compl. dis. (90 sec.). (2) Cotton, white. (3) Wool, YO→ bril.	**MONO CHROME RED G [M].**
884	Aft-chr. [+] R Bkn (D). H_2SO_4...YO Bkn (D). NaOH...O-OS1.	(1) Compl. dis. (½ min.). (2) Cotton, OT3. (3) Wool, YO sl. dull.	**ACID CHROME BROWN T [By].** (Intro. 1902).
885	Aft-chr. [−] ←YOS1+. H_2SO_4...(f) VR. NaOH...(f) R.	(1) Compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, YO.	**MILLING ORANGE [D].** Disazo dyestuff: *aminoazobenzenesulphonic ac.* + salicylic ac.
886	Aft-chr.[−]. H_2SO_4...(f) ←R. NaOH...O.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, YO.	**ALIZARINE YELLOW RW [B].**
887	Aft-chr. [−]. H_2SO_4...RT1→ bril. NaOH...←YO−.	(1) OT2 dis. (2) Cotton, OT2−. (3) Wool, ←YO−.	**SUDAN I [A].** Monazo dyestuff: *aniline* + *β*-naphthol.
888	Aft-chr. [−]. H_2SO_4...O Bkn (M+). NaOH...RS1.	(1) Compl. dis. (½ min.). (2) Cotton, YOT2-3. (3) Wool, YOS1; ←YO.	**ANTHRACENE CHROMATE BROWN 3G [C].**
889	Aft-chr. [−]. H_2SO_4...OS1-2. NaOH...R Bkn (M).	(1) Compl. dis. (40 sec.). (2) Cotton, OT3. (3) Wool, ←YO.	**ANTHRACENE ACID BROWN G [C].**
890	Aft-chr. [−] YOS1. H_2SO_4...OS1+. NaOH...RO.	(1) Alm. compl. dis. (2) Cotton, white. (3) Wool, YO.	**RESORCINE YELLOW [A].** Monazo dyestuff: *sulphanilic ac.* + resorcine, (N_2 = 6). — (1875).
891	Aft-chr. [−] YOS1. H_2SO_4...OS1. NaOH...YOS1→.	(1) Alm. compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, YO→.	**WOOL YELLOW [B].** Monazo dyestuff: *aniline* + maclurin. — (1887).
892	Aft-chr. [−] OYT1. H_2SO_4...YOS1. NaOH...R Bkn (L).	(1) Compl. dis. (20 sec.). (2) Cotton, alm. white. (3) Wool, YO-OY, T1 dull.	**CHROME ORANGE [SS].**
893	Aft-chr. [−] OS1. H_2SO_4...←YOS1. NaOH...(f) R Bkn (D).	(1) Compl. dis. (50 sec.) (2) Cotton, alm. white. (3) Wool, YO.	**META CHROME ORANGE R Double [A].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
O–YO, S1 powder; e. s. aq. (OR, OY and OYT2); s. alc. (O); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu, +.	879
COLORS ON WOOL.	
←ROS2 powder; e. s. aq. (OR, Y–OY, T2); s. alc. (←OY); s. conc. H_2SO_4 (←R). — Ppt. tests: H_2SO_4, ±; NaOH, – (R); Cr, +; Cu and Ca, –.	880
Brown powder; e. s. aq. (OR sl. dull, OY and OYT2); s. alc. (YO); s. conc. H_2SO_4 (R→). — Ppt. tests: H_2SO_4, Cr and Cu, all +; NaOH and Ca, –. — Dyeing: WGSCh.	881
Black powder; e. s. aq. (OS2→, Y and YT2); s. alc. (O); s. conc. H_2SO_4 (O–YO, S1). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGSCh.	882
RS1 powder; e. s. aq. (RO, Y and YT2); s. alc. (YO); s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4, NaOH and Ca, all –; Cr, +; Cu, ±. — Dyeing: WCh (single bath).	883
Black powder; e. s. aq. (OS2, OY and OYT2); s. alc. (OY→); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: WGSCh.	884
RO powder; e. s. aq. (YO, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4 and Ca, –; NaOH, – (R); Cr and Cu, +. — Dyeing: WCh.	885
YOS1 powder; e. s. aq. (O, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (←R). — Ppt. tests: H_2SO_4, Cu and Ca, all –; NaOH, – (RO); Cr, +. — Dyeing: WCh.	886
RO powder; i. c. or h. aq.; e. s. alc. (←YO); s. conc. H_2SO_4 (←R). — Allied brands: Sudan I [Fi]; Dark Yellow Ext. conc., sol. in fat [F]; Orange G [CJ]; Orange Soluble in fat [PL]. — Used for coloring oils and varnishes.	887
Black powder; s. aq. (turbid OS2, OY and OYT2); s. alc. (YO –OY); s. conc. H_2SO_4 (OR Bkn (M)). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WCh (single bath).	888
Black powder; e. s. aq. (OS2, OY and OYT2); s. alc. (OY); s. conc. H_2SO_4 (OR Bkn (M)). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS, WCh, SA.	889
YO powder; e. s aq. (O, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4. NaOH, (OR), Cr, Cu and Ca, all –. — Allied brands: Resorcine Yellow [K] [F] [H]; Chrysoine [B]; Acme Yellow [L]; Chryseoline Yellow T [J]; Gold Yellow [By]; Acid Yellow RS [D]; Tropaoline O [C]. — Dyeing: WGS.	890
ROS1 bril. fibrous powder; i. c. aq.; s. NaOH (OS1, YO and YT2 filtrate); s. alc. (YO and GYT2); s. conc. H_2SO_4 (YO). — Dyeing: WGS, WCh.	891
YOS2 powder; e. s. aq. (←O, Y and YT2); s. alc. (YO); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, + (OYT2); NaOH, – (OR); Cr, Cu and Ca, +; (Cu alm compl.) — Dyeing: WCh.	892
YOS1 paste; e. s. aq. (O, Y and YT2); e. s. alc. (YO); s. conc. H_2SO_4 (YO); e. s. alkali (R, YO and YOT2). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (R–); Cr, Cu and Ca, all +, alm. compl. — Dyeing: WCh.	893

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
894	Aft-chr. [−] OS1. H_2SO_4...←YOS1. NaOH...(f) O Bkn (D).	Same as above.	**FAST PRINTING YELLOW R PASTE [By].**
895	Aft-chr.[−] ←YO–YOS1. H_2SO_4...YO→. NaOH...(f) OR Bkn (M)+.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, YO–OY bril.	**ALIZARINE ORANGE R [SS].**
896	Aft-chr. [−]. H_2SO_4...←YO. NaOH...OT1.	(1) Compl. dis. (20 sec.). (2) Cotton, alm. white. (3) Wool, YO.	**FAST LIGHT ORANGE G [By].** (Intro. 1904).
897	Aft-chr. [−]. H_2SO_4...OYT1→. NaOH...OS1.	(1) Compl. dis.; air ret., VR Bkn (L). (2) Cotton, white. (3) Wool, ←YO bril.	**AURANTIA** (Kahlbaum). Ammonium or sodium salt of hexanitrodiphenylamine. — (1873).
898	Aft-chr. [−] Y–YS1. H_2SO_4...YO− dull. NaOH...YO→.	(1) Compl. dis. (¼ min.). (2) Cotton, white. (3) Wool, YO–OY bril.	**HELIANTHINE.** (Synthesized). Monazo dyestuff: *sulphanilic ac.* + dimethylamine, (N_2= 4). — (1875).
899	Aft-chr. [−]. H_2SO_4...(f) G–BG. NaOH...YO–OY.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, YO–OY bril.	**JAUNE SOLIDE N [P].** Monazo dyestuff: *1-methyl-4-aminobenzenesulphonic ac.* (2)+diphenylamine. — (1878).
900	Aft-chr. [−]. H_2SO_4...(f) VS2. NaOH...YO	(1) Compl. dis. (⅔ min.). (2) Cotton, white. (3) Wool, YO bril.	**ACID YELLOW D [A].** Monazo dyestuff: *sulphanilic ac.* + diphenylamine. — (1876).
901	Aft-chr. [−]. H_2SO_4...(f) VS2. NaOH...YO.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←YO bril.	(1) **TROPÆOLINE G [C].** (2) **METANIL YELLOW OO [K].** (3) **METANIL YELLOW R [H].** (4) **FAST YELLOW O [B].** (5) **METANIL YELLOW EXT. [A].** Monazo dyestuff: *1-aminobenzenesulphonic ac.*(*3*) + diphenylamine.
902	Aft-chr. [−]. H_2SO_4...(f) RV. NaOH...(f) R Bkn (v.D).	(1) Compl. dis. (1⅓ min.). (2) Cotton, white. (3) Wool, YO–OY bril.	(1) **AZO YELLOW SE [B].** (2) **INDIAN YELLOW GR [By].**
903	Aft-chr. [−]. H_2SO_4...(f) RVS2→. NaOH...(f) Y Bkn (M–D).	(1) Compl. dis. (1 min.). (2) Cotton, OYT3. (3) Wool, YO.	**INDIAN YELLOW R [C].**
			SECTION OF ORANGE-YELLOW
904	Aft-chr. [+] OR Bkn (M). H_2SO_4...R. NaOH...(f) RV.	(1) Alm. compl. dis. (yel. sol.). (2) Cotton, alm. white. (3) Wool, OY–OYT1.	**ALIZARINE RED RS 20% PASTE [B].**
905	Aft-chr. [+]. H_2SO_4...RS1. NaOH...(f) BVS1→.	(1) Alm. compl. dis., (sol. yel.). (2) Cotton, white. (3) Wool, OY dull.	**ALIZARINE V [B].** Alizarine, (*α,β*-dioxyanthraquinone). — (1826, 1868).
906	Aft-chr. [+] R Bkn (L). H_2SO_4...ROS1+. NaOH...VR sl. dull.	(1) Alm. compl. dis., sol Y. (2) Cotton, white. (3) Wool, OY.	**ALIZARINE RED SDG 20% paste [M].** " Flavopurpurine," 1, 2, 6-Trioxyanthraquinone. — (1876).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
As above except d. s. c. and h. aq. to turbid OY and omission of ppt. tests.	**894**
O–YO, S1 powder; e. s. aq. (sl. turbid OY, Y and YT2); s. alc. (YO→); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, + (OY); NaOH, – (OR); Cr and Cu, +; Ca, –. — Dyeing: WCh.	**895**
Bril. RO→ powder; e. s. aq. (YO, OY and OYT2); s. alc. (YO); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all –; NaOH, – (OR). — Dyeing: WGS.	**896**
ORS1 cryst.; e. s. aq. (O, OY and OY–Y, T2); e. s. alc. (O); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, +, compl.; NaOH and Ca, –; Cr, +; Cu ±. — Allied brand: Kaiser Yellow. — Dyeing: Leather, SS.	**897**
YOS1 powder; e. s. aq. (RO, YO and OYT2); s. alc. (Y); s. conc. H_2SO_4 (O sl. Bkn). — Ppt. tests: H_2SO_4 + (R); NaOH, Cr, Cu and Ca, all +. — Allied brands: Helianthine [B]; Orange III [P] [t.M] [DH] [RF]; Orange No 3 [P]; Dimethylaniline Orange, Methyl Orange, Tropaoline D, Gold Orange. — Used as an alkalimetric indicator.	**898**
YS2 powder; e. s. aq. (YO, Y and YT2); s. alc. (Y); s. conc. H_2SO_4 (BG Bkn (D)). — Ppt. tests: H_2SO_4, +, alm. compl. (VR); NaOH and Cr, +; Cu and Ca, –. — Allied brand: Fast Yellow [t.M]. — Dyeing: WGS.	**899**
OY dull powder; e. s. aq. (YO, Y and YT2); s. alc. (OY→); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, + (VR); NaOH, Cr, Cu and Ca, all +. — Allied brands: Orange IV [B] [K] [DH] [F] [G] [M] [P] [SB] [t.M] [H] [Sch]; Orange No. 4 [P]; Orange N [B] [J]; Orange GS [O]; New Yellow [By]; Tropaoline 00 [C]; Fast Yellow [BrS]; Diphenyl Orange; Diphenylamine Orange; Jaune d'aniline. — Dyeing: WGS.	**900**
YO powder; e. s. aq. (O–YO, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, + (VR –); NaOH, Cu and Ca, all –; Cr, +. — Allied brands: Metanil Yellow [A] [B] [By] [D] [DH] [G] [K] [O] [t.M] [F] [Fi] [S] [Sch]; Orange MN [J]; Victoria Yellow O double conc. [M]; Jaune G [Metanil extra] [MLy]. — Dyeing: WGS.	**901**
(1) OS1, (2) YO–O powder; e. s. aq. (OY, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4 and Ca, –; NaOH, + (R Bkn (L)); Cr, +; Cu, –. — Dyeing: WGS.	**902**
ROS2 powder; e. s. aq. (O–YO, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, – (OR); NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS.	**903**
COLORS ON WOOL.	
YOS1 paste; d. s. aq. (turbid OY filtrate); s. alc. (OY and Y); s. conc. H_2SO_4 (R). — Dyeing: WCh.	**904**
OYS2 paste; i. aq. (aq. filtrate turbid OY); s. alc. (OY and Y); s. conc. H_2SO_4 (R). — Mordanted wool tests: w. Cr (VR–R); w. Al. (O). — Dyeing W. Ch. — Allied brands: Alizarine Ic [By]; Alizarine No. 1 [M]; Alizarine V [I].	**905**
YOS2 paste; v. d. s. aq. (v. turbid OY filtrate); s. alc. (Y); s. conc. H_2SO_4 (OR) — Mordanted wool tests: w. Cr (VRT1–RT1+); w. Al (O dull). — Dyeing: CAl; CCr. — Allied brands: Alizarine RG, G1, [B]; Alizarine X [By].	**906**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
907	Aft-chr. [+] R Bkn (L). H_2SO_4...YO Bkn (M). NaOH...YO.	(1) Compl. dis. (15 sec.). (2) Cotton, alm. white. (3) Wool, OY–YO bril.	**MONO CHROME BROWN AB [M].**
908	Aft-chr. [+] R Bkn (M). H_2SO_4...YO. NaOH...O.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, OY–YO bril.	**ACID ALIZARINE GRENADE R [M].** (Intro. 1901).
909	Aft-chr. [−]. H_2SO_4...(f) ←VR. NaOH...(f) R Bkn (D)→.	(1) Compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, OY–YO bril.	**INDIAN YELLOW FF [C].**
910	Aft-chr. [−]. H_2SO_4...(f) R. NaOH...(f) OR Bkn (v.D).	(1) Compl. dis. (1 min.). (2) Cotton, YT4. (3) Wool, OY–YO.	(1) **INDIAN YELLOW G [By].** (2) **HELIANTHINE [G].** Mixt. of nitrated Diphenylamine Orange and nitrodiphenylamines. —(1880, '81).
911	Aft-chr. [−]. H_2SO_4...(f) R. NaOH...RO→ sl. dull.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, OY–YO.	**ALIZARINE YELLOW KR powder [M].**
912	Aft-chr. [−]. H_2SO_4...R bril. NaOH...OY.	(1) Compl. dis. (90 sec.). (2) Cotton, white. (3) Wool, OY bril.	**NEW FAST YELLOW R [B].**
913	Aft-chr. [−]. H_2SO_4...R. NaOH...←Y.	(1) Dis. (1½ min.). (2) Cotton, white. (3) Wool, OY→ bril.	**MILLING YELLOW O [C].** (Intro. 1899).
914	Aft-chr. [−]. H_2SO_4...R. NaOH...(f) W gray (D).	(1) YT3 dis. (2) Cotton, YT4. (3) Wool, OY bril.	**AZO YELLOW BYE [PK].**
915	Aft-chr. [−]. H_2SO_4...RS1→. NaOH...(1) C gray (v.D), (2) G gray (D).	(1) YOT3 dis., (YT1 sol.). (2) Cotton, besmeared. (3) Wool, (1) OY Bkn (M); (2) OYS2.	(1) **ALIZARINE BROWN SO Powder [B].** (2) **ALIZARINE BROWN Powder [M].** Trioxyanthraquinone, sodium salt. (1877, '86).
916	Aft-chr. [−]. H_2SO_4...(f) OR. NaOH...RO–O.	(1) YT3 dis. (2) Cotton, Y–OY, T3 dull. (3) Wool, OY.	**MORDANT YELLOW R [M].**
917	Aft-chr. [−] OYS1. H_2SO_4...RO sl. dull. NaOH...YO.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, OY→.	(1) **ANTHRACENE YELLOW BN [C].** (2) **CHROME FAST YELLOW R Powder [A].** (3) **ALIZARINE YELLOW GD Powder [B].** (4) **CHROME FAST YELLOW GG [I].** (5) **ACID ALIZARINE YELLOW O [M].** (1) Monazo dyestuff: *β-naphthylaminesulphonic ac.* + salicylic ac. (N_2 : OH = 1 : 4).—((1) 1890).
917-1	Aft-chr. [−] (OYS1). H_2SO_4...RO sl. dull. NaOH...←YO.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, OY.	(1) **MORDANT YELLOW O Conc. [M].** (2) **META CHROME YELLOW R [A].** (1) β-naphthylaminesulphonic ac. + salicylic ac. (N_2 : OH = 1:4).—(1890).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Brownish-black powder; e. s. aq. (O–YO, S1, OY and OYT2); s. alc. (OY); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –.	**907**
O Bkn (M) powder; e. s. aq. (RO–ROS1, OY and OYT2); s. alc. (YO); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: WCh.	**908**
RO–O powder; s. aq. (YO→ and Y–GY, T1); s. alc. (OY and Y); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, Cu and Ca, all –; NaOH, ± (ORS1); Cr, +. — Dyeing: WGS.	**909**
(1) YOS1 powder; sl. s. aq. (←Y); sl. s. alc. (Y); s. conc. H_2SO_4 (R bril. and VRT1). — Ppt. tests: H_2SO_4, NaOH, Cu, Ca, –; Cr, ±. — Allied brands: Azo Yellow [I] [K] [M] [S]; Azo Yellow M [DH]; Azo Flavine [B] [D] [t.M]; Azo Acid Yellow [A]; Indian Yellow [By]; Citronine [SB], [Fi]. — Dyeing: WGS, SS.	**910**
YO Bkn (D) powder; e. s. aq. (dull RO and Y); s. alc. (OY); s. conc. H_2SO_4 (VRT1). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl.	**911**
R powder; e. s. aq. (YO, Y and YT2); alm. i. alc.; s. conc. H_2SO_4 (R). — Ppt. tests: H_2SO_4, NaOH, Cu, Ca and Cr, all –. — Dyeing: WGS.	**912**
YO–OY powder; s. aq. (OY and YT1→); s. alc. (Y); s. conc. H_2SO_4 (R bril. and R–VR, T2). — Ppt. tests: H_2SO_4, + (ORS2, YS1 in thin layers); NaOH, Cu and Ca, all + (silky cryst.); Cr, + compl. — Dyeing: WGS.	**913**
YOS1 powder; sl. s. aq. (OY and ←GYT1); sl. s. alc. (Y→); s. conc. H_2SO_4 (VRT1). — Ppt. tests: H_2SO_4, NaOH (ORS2), Cu and Ca, all –; Cr, +.	**914**
Black powder; s. aq. (YOS2 and OYT1 dull, or Y Bkn (L)); s. alc. (YT1+); s. conc. H_2SO_4 (ROS1). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – (YG Bkn (D)). — Dyeing: WCh. — Allied brands: Alizarine Brown Paste [B] [By] [H] [M]; Alizarine Brown G Paste [By].	**915**
YOS1 powder; sl. s. aq. (OY and ←GYT1); sl. s. alc. (YT1); s. conc. H_2SO_4 (RO). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (←O); Cu, +; Ca, –. — Dyeing: WCh.	**916**
(1) OYS1, (2) OYS1, (3) OY, (4) Y Bkn (M), powder; e. s. aq. ((1, 2, 4) OY, (3) Y, and GYT2); s. alc. (Y–YT2); s. conc. H_2SO_4 ((1, 2, 3) YO, (4) O). — Ppt. tests: H_2SO_4, – or ±; NaOH, – (O); Cr, +; Cu, + or ±; Ca, –. — Allied brands of (1): Chrome Yellow D [By]; Mordant Yellow [B]; Milling Yellow [D] [Lev]; Alizarine Yellow G [S]; Chrome Fast Yellow [A]. — Dyeing: WGS, WCh.	**917**
(1) OYS3 powder; (2) OYS1 cryst. silky paste; e. s. aq. (YO and GYT2); s. alc. (Y and YT2); s. conc. H_2SO_4 (YO).—Ppt. testc: H_2SO_4, ±; NaOH, – (RO–O); Cr, + compl.; Cu, + or ±; Ca, –. — Allied brands: Chrome Yellow D [By]; Anthracene Yellow BN [C]; Mordant Yellow [B]; Milling Yellow [D] [Lev]; Alizarine Yellow G [S]; Chrome fast Yellow [A]. — Dyeing: WCh.	**917-1**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
917-2	Aft-chr. [−]. H_2SO_4...RO sl dull. NaOH...YO.	(1) Compl. dis. (⅓ min.). (2) Cotton, white. (3) Wool, OY.	**CHROME YELLOW D [By].** Monazo dyestuff: β-naphthylaminesulphonic ac. + salicylic ac., (N_2 : OH = 1 : 4).
918	Aft-chr. [−]. H_2SO_4...O sl. dull. NaOH...OY.	(1) Compl. dis. (¾ min.). (2) Cotton, white. (3) Wool, OY bril.	**FAST YELLOW G [K].** Mixt. of aminoazobenzenedisulphonate w. aminoazobenzenemonosulphonate of sodium.
919	Aft-chr. [−]. H_2SO_4...O-YO, S1. NaOH...OY→.	(1) Compl. dis. (⅔ min.). (2) Cotton, white. (3) Wool, OY-Y.	**CHRYSOLIN [Kell].**
920	Aft-chr. [−]. H_2SO_4...O Bkn (M). NaOH...Y-YS1.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, OYS1→+.	**GAMBINE Y [H].**
			(1) **GAMBINE B [H].** (2) **" R [H].**
923	Aft-chr. [−]. H_2SO_4...YO→. NaOH...O.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, OY.	**ALIZRAINE YELLOW GT [B].**
924	Aft-chr. [−] OYS1. H_2SO_4...←YO. NaOH...O→.	(1) Compl. dis. (35 sec.). (2) Cotton, white. (3) Wool, OY→.	**ALIZARINEYELLOWYYFP[Lev].**
925	Aft-chr. [−]. H_2SO_4...YO→. NaOH...O-OS1.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, ←OY.	**CHROME YELLOW R [SS].**
926	Aft-chr. [−] Y dull. H_2SO_4...YOS1. NaOH...YOT1.	(1) Compl. dis. (2) Cotton, white. (3) Wool, OY.	**AUROTINE [Cl Co].** Sodium salt of tetranitrophenolphthaleine. — (1889).
927	Aft-chr. [−] (Y→). H_2SO_4...YO→. NaOH...←OY.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, OY.	**CHROME YELLOW J [SS].**
928	Aft-chr. [−]. H_2SO_4...YO→. NaOH...OY→.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, OY.	**FAST YELLOW F [B].**
			GAMBINE B and R [H].
929	Aft-chr. [−]. H_2SO_4...(Y). NaOH...Y.	(1) Compl. dis. (1½ min.). (2) Cotton, YT4. (3) Wool, OY-Y bril.	**FLAVAZINE RL [M].**
930	Aft-chr. [−]. H_2SO_4...(f) V. NaOH...YO→.	(1) Compl. dis. (40 sec.). (2) Cotton, white. (3) Wool, OY-YO bril.	**METANIL YELLOW Y [H].**
931	Aft-chr. [−] (OYS1). H_2SO_4...(f) W gray (D)-YO Bkn (v.D). NaOH...←YO.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, OY-Y.	**ANTHRACENE YELLOW C [C].** Disazo dyestuff: *thioaniline* + 2 mol. salicylic ac., (N_2 : OH = 4 : 1).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YO Bkn (M) powder; e. s. aq. (YO and YT2); s. alc. (Y and YT2); s. conc. H_2SO_4(YO). — Ppt. tests: H_2SO_4, Ca, –; NaOH, –; Cr, + compl.; Cu, + or ±. — Allied brands: same as for the two preceding. — Dyeing: WCh.	**917-2**
YO powder; e. s. aq. or alc. (OY–Y, Y and YT2→); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4 (←O), NaOH, Cr, Cu and Ca, all –. — Allied brands: Fast Yellow [B] [By] [SB]; Fast Yellow G [DH]; Fast Yellow, greenish [D]; Fast Yellow S [C]; Acid Yellow [A] [F] [P]; New Yellow L [K]. — Dyeing: WGS.	**918**
OY–YO powder; e. s. aq. (OY and GYT2); s. alc. (Y and GYT2); s. conc. H_2SO_4 (←Y), no fluorescence. — Ppt. tests: H_2SO_4, – (RO); NaOH, Cr, Cu and Ca, all –. — ["*Chrysolin* (*Mo*) (*S*)," disc. 1877, is sodium salt of benzyfluoresceine. — Dyeing: WGS.]	**919**
GY Bkn (M) paste; s. c. aq., e. s. h. aq. (Y and YT2); e. s. alkali (Y Bkn→); s. alc. (YO Bkn) s. conc. H_2SO_4 (YO Bkn (M)). — Ppt. tests: H_2SO_4, NaOH, Cr and Ca, all –; Cu, +. — Dyeing: WCh.	**920**
See No. 79 for description.	
YOS1 bril. powder; e. s. aq. (Y and YT2); e. s. alc. (Y and GYT2); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; Ca, –. — Dyeing: WCh.	**923**
OYS1–OY powder; e. s. aq. (OY and YT2→); d. s. alc. (YT1←2→); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, Cu and Ca, all –; Cr, ±. — Dyeing: WCh.	**924**
YOS2 powder; e. s. aq. (OY and YT2); s. ac. (Y–); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, Cr and Cu, all +; NaOH, – (O); Ca, –. — Dyeing: WACh.	**925**
O powder; e. s. aq. (←Y and YT2); s. alc. (Y); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: WA or WCh.	**926**
YO–O,S1 powder; e. s. aq. (OY and YT2); d. s. alc. (YT1 and YT2→); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4 and Cu, + compl.; Cr, +; Ca, –.	**927**
YOS1 + powder; e. s. aq. (YO, Y and YT2→); s. alc. (←Y); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, – (OR); NaOH, – (OY); Cr, Cu and Ca, all –. — Dyeing: WGS.	**928**
See No. 79 for description.	
YO powder; e. s. aq. (Y–OY and GYT2); e. s. alc. (Y and GYT2); s. conc. H_2SO_4 (Y–GY,T1). — Ppt. tests: H_2SO_4, +; Cr and Ca, + compl.; Cu, –. — Dyeing: WGS.	**929**
YOS1–2 powder; e. s. aq. (O–YO, Y and YT2); s. alc. (OY); s. conc. H_2SO_4 (V). — Ppt. tests: H_2SO_4, + (VR); NaOH, + (cryst.); Cr, +; Cu, and Ca, –. — Dyeing: WGS.	**930**
YO–OY, S2 powder; sl. s. aq. (OY and YT1); s. alc. (Y); s. conc. H_2SO_4 (R Bkn (D)). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, –; Ca, +. — Dyeing: WGS, WCh.	**931**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF YELLOW
932	Aft-chr. [+] Y Bkn (M)+. H_2SO_4...OR. NaOH...YO–OY.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←Y.	**ANILINE YELLOW (Kahlbaum).** p-aminoazobenzene hydrochloride. (1861).
933	Aft-chr. [−]. H_2SO_4...RO. NaOH...OY.	(1) Compl. dis. (40 sec.) (2) Cotton, white. (3) Wool, Y bril.	**CHROME FAST YELLOW 2G Powder [A].**
934	Aft-chr. [−]. H_2SO_4...RO. NaOH...O→.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, ←Y.	**CHROME YELLOW P [G].**
935	Aft-chr. [−]. H_2SO_4...O Bkn (M). NaOH...OYT1→.	(1) Compl. dis. (45 sec.). (2) Cotton, white. (3) Wool, ←YT1−.	(1) **DIRECT YELLOW 2G [K].** (2) **DIRECT YELLOW 3G [K].** Sodium salt of dinitrostilbenedisulphonic ac. — (1886).
936	Aft-chr. [−]. H_2SO_4...O–YO. NaOH...O→.	(1) Compl. dis. (35 sec.). (2) Cotton, white. (3) Wool, ←Y.	**CRUMPSALL YELLOW YYFP (Lev).** [" Crumpsall Yellow (Lev) " is a monazo dyestuff: (disc. 1894), *2-aminonaphthalenedisulphonic ac* (*6,8*) + salicylic ac., (N_2 : OH = 4 : 1)].
937	Aft-chr. [−]. H_2SO_4...OS1. NaOH...←OY.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, YT2+.	**CHROME YELLOW DF [By].**
938	Aft-chr. [−] Y–YS1. H_2SO_4...YO. NaOH...←OY.	(1) Compl. dis. (75 sec.) (2) Cotton, white. (3) Wool, ←YT1.	**CHROME FAST YELLOW G [A].** Sodium salt of aminotriazinesulphonic acid-azosalicylic ac.—(1895).
939	Aft-chr. [−]. H_2SO_4...YO. NaOH...YT1.	(1) Compl. dis. (65 sec.). (2) Cotton, white. (3) Wool, Y→ bril	**FLAVAZINE 3GL [M].**
940	Aft-chr. [−] OYS1. H_2SO_4...OY. NaOH...YO.	(1) YT2− dis. (2) Cotton, white. (3) Wool, ←Y bril.	**SULPHON YELLOW 5G [By].**
941	Aft-chr. [−] OYS1. H_2SO_4...OY. NaOH...YO.	(1) Compl. dis. (15 sec.). (2) Cotton, white. (3) Wool, ←Y bril.	**MONO CHROME YELLOW G [M].**
942	Aft-chr. [−]. H_2SO_4...←OY. NaOH...OY.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, Y.	**ALIZARINE YELLOW 3G [Lev].**
943	Aft-chr. [−] OYS1. H_2SO_4...OY dull. NaOH...←OY.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, Y bril.	**PHENOFLAVINE [O].** Monazo dyestuff: *1-aminobenzenesulphonic ac.*(*3*) + 1-aminophenol (3)-sulphonic ac. (5),(N_2 − 6). — (1892).
944	Aft-chr. [−]. H_2SO_4...OY. NaOH...Y.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, Y–OY.	**FAST LIGHT YELLOW G [By].** (Intro. 1899).
945	Aft-chr. [−]. H_2SO_4...(1) ←Y; (2) OY. NaOH...Y.	(1) Compl. dis. (35 sec.). (2) Cotton, white. (3) Wool, Y bril.	(1) **FAST LIGHT YELLOW 2G [By].** (2 **FAST LIGHT YELLOW 3G [By].** (Intro. (1) 1904; (2) 1901).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark steel blue cryst. powder; d. s. aq. (OY and GYT2); e. s. alc. (YO deep and GYT2); s. conc. H_2SO_4 (Y→) –. — Ppt. tests: H_2SO_4, – (←YOT1); NaOH, – (YT1→); Cr, Cu, Ca, –. — Allied brands: Aniline Yellow [DH]; Spirit Yellow [K] [Cr]. — [Obsolete as dyestuff].	932
←YS1 powder; e. s. aq. (YT1 and GYT2); e. s. alc. (Y and GYT2); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, + compl.; Cr, +; Cu, + alm. compl.; Ca, –. — Dyeing: WCh.	933
OYS2 powder; s. aq. (OY and GYT2); s. alc. (OY and YT2); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; Ca, + . — Dyeing: WCh.	934
←YOS2 powder; e. s. aq. (YO and GYT2); i. alc.; s. conc. H_2SO_4 (OR–O). — Ppt. tests: H_2SO_4, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	935
OY–OYS1 powder; e. s. aq. (OY and GYT2); s. alc. (Y and GYT2); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, Cu and Ca, all –; Cr, +. — Dyeing: WGS or WCh.	936
YOS1 powder; e. s. aq. (OY and GYT2); s. alc. (Y and GYT2); s. conc. H_2SO_4 (YO). — Ppt. tests: H_2SO_4, Cu and Ca, all –; Cr, +. — Dyeing: WCh.	937
OYS1 powder; e. s. aq. (Y and GYT2); s. alc. (Y and GYT2); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, +; Cr, + compl.; Cu and Ca –. — Dyeing: WCh.	938
YO→ powder; s. aq. (←Y and ←GYT1); sl. s. alc. (GY–Y, T1); s. conc. H_2SO_4 (OY and YO). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: WGS.	939
←OYS1 powder; e. s. aq. (←Y and GYT2); s. alc. (Y and GYT2); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, + alm. compl. Cr, + ; Cu, ±; Ca, –. — Dyeing: WGS.	940
YO–OY powder; e. s. aq. (Y and GYT2); s. alc. (Y and YT2→); s. conc. H_2SO_4 (YO–Y). — Ppt. tests: H_2SO_4 and Cu, + compl.; Cr, +; Ca, –. — Dyeing: WGS (single bath).	941
OYS2 powder; e. s. aq. (←Y and GYT2); s. alc. (Y and YT2); s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, + compl.; Cr and Cu, +; Ca, –. — Dyeing: WGS.	942
OY–OYS1 powder; e. s. aq. (OY→ and GYT2); sl. s. alc. (Y and GYT2); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all –. — Dyeing: WGS.	943
YO dull powder; s. aq. (OY and ←GYT1); s. alc. (Y–GY, T1); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS.	944
(1) YO, (2) ←Y, powder; e. s. aq. (Y and GYT1); s. alc. (YT1→); s. conc. H_2SO_4 (Y). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: WGS.	945

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
945-1	Aft-chr. [−]. H_2SO_4...OY–Y, T3. NaOH...Y–Y, T1.	(1) Compl. dis. (½ min.); (sol. at first light red, later colorless). (2) Cotton, white. (3) Wool, Y→.	**MARTIUS YELLOW.** 2,4-Dinitronaphthol(1) sodium salt. (Ammonium and calcium salts are also sold.) — (1864).
946	Aft-chr. [−]. H_2SO_4...(1) YT2; (2) OYT1. NaOH...YT1.	(1) Compl. dis. (50 sec.). (2) Cotton, white. (3) Wool, Y bril.	(1) **NAPHTHOL YELLOW S [C].** (2) **JAUNE OS [P].** (3) **LEMON YELLOW EXT. [Fritzsche].** (1) Di-potassium or sodium 2,4-dinitronaphthol(1)-sulphonate(7). (1879).
947	Aft-chr. [−] Y–YS1. H_2SO_4...YT2. NaOH...←OY.	(1) Compl. dis. in 1½ min. after first changing to OR. (2) Cotton, white. (3) Wool, Y→ bril.	**PICRIC ACID.** 2,4,6-Trinitrophenol(1). (1771).
948	Aft-chr. [−]. H_2SO_4...Y or ←Y. NaOH...Y.	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, Y and ←Y bril.	(1) **TARTRAZINE [S].** (2) **HYDRAZINE YELLOW O [O].** (3) **ACID YELLOW AT [C].** (4) **SULPHON YELLOW R [By].** (5) **FLAVAZINE L [M].** (6) **FLAVAZINE T [M].** Disodic 1-p-sulphoxylphenyl-3-carboxyl-4-p-sulphoxylphenylhydrazono-5-pyrozolon. — ((1) 1884; (2) 1901; (3) 1899).
949	As above.	As above.	(1) **FLAVAZINE S [M].** (2) **HYDRAZINE YELLOW SO [O].**
			SECTION OF GREEN
951	Aft-chr. [+] OYS2. H_2SO_4...YOS1. NaOH...G.	(1) Compl. dis. (45 sec.). (2) Cotton, white. (3) Wool, ←G.	**NAPHTHOL GREEN B [C].** Ferrous sodium salt of nitroso-β-naphthol monosulphonic ac. — (1883).
			SECTION OF BLUE-GREEN
952	Aft-chr. [+] R Bkn (M). H_2SO_4...BGS1→. NaOH...BS1→.	(1) Compl. dis. (30 sec.). (2) Cotton, alm. white. (3) Wool, BGS2.	(1) **NAPHTHOL DARK GREEN G [C].** (2) **AMINE GREEN BLACK B [A].** (3) **AMINE BLACK GREEN B [A].**
			SECTION OF GREEN-BLUE
953	Aft-chr. [+] W gray (M). H_2SO_4...G–BG Bkn (D). NaOH...R Bkn (L–M).	(1) Compl. dis. (20 sec.). (2) Cotton, white. (3) Wool, GB–GBS1→.	**ALIZARINE LANACYL BLUE BB [C].**
954	Aft-chr. [−] ←GBS2. H_2SO_4...←RS1. NaOH...(f) BV Bkn (D).	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, ←GBS2.	**ORTHO CYANINE 6G [A].**
955	Aft-chr. [−] BGT1. H_2SO_4...OYT2. NaOH...OT3–2.	(1) Compl. dis. (1 min.). (2) Cotton, BT3. (3) Wool, GBT1.	**OIL BLUE [M].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Brilliant ←Y cryst. powder, taste *not* bitter; s. aq. (Y and GYT2); e. s. alc. (Y–GY); d. s. conc. H_2SO_4 (sol. alm. colorless). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Gives a coloration similar to that given by picric acid in test w. KCN described under No. 947. — Allied brands: Martius Yellow [M]; Manchester Yellow [H] [Lev] [RD]; Primrose; Naphthol Yellow [SB]. — Coloring spirit varnish and macaroni.	**945-1**
YO alm. tasteless powder; e. s. aq. (Y and GYT2); s. alc. (YT1 and YT2); s. conc. H_2SO_4 ((1) YT2; (2) YT1→). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Gives a YO sol. w. KCN under conditions stated under No. 947. — Allied brands: Naphthol Yellow S [B] [By] [DH] [F] [I] [H] [Lev] [O] [S]; Citronine A [L]; Sulphur Yellow S [K]; Jaune Acide [DH]; Acid Yellow S. — Dyeing: WGS. Use as a food color is permitted by U. S. "Pure Food Law."	**946**
←GYT2 cryst. powder, w. *intensely bitter taste*; s. aq. (YT1→ and GYT1); e. s. alc. (GYT1); H_2SO_4 sol. colorless. — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. Gives OR colored sol. when 1 sq. inch of woolen cloth dyed by method of Test 5 is boiled for 2 min. w. a one per cent aq. sol. of KCN. — Dyeing: W, S, leather.	**947**
YO powder; e. s. aq. (OY and YT1); s. alc. (YT1); s. conc. H_2SO_4 (Y). — KCN coloration (T.20): Y. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, ± or +. — Gives a Y or YT1 sol. w. KCN under the conditions stated under No. 947. — Allied brands: Tartrazine [B] [H] [I] [BCF]; Hydrazine Yellow [O]. — Dyeing: WGS.	**948**
As above except no ppt. w. H_2SO_4.	**949**
COLORS ON WOOL.	
G Bkn (D) powder; e. s. aq. (GS1 and GT2); v. sl. s. alc. (YGT2→); s. conc. H_2SO_4 (YO→). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Allied brands: Naphthol Green B (MLy). — Dyeing: WSFe.	**951**
COLORS ON WOOL.	
Dark brown powder; e. s. aq. (opaque, blue-green in thin layers, BG–GB and GBT2); s. alc. (BGT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (deep purple in thin layers); Cu and Ca, –. — Dyeing; WGS, CWD.	**952**
COLORS ON WOOL.	
Brown-black sl. lustrous powder; e. s. aq. (opaque, VB and VBT2); alm. i. alc.; s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, NaOH (R–OR in thin layers), Cu and Ca, –; Cr, + compl.	**953**
Dark N. gray powder; e. s. aq. (opaque, V and VT2); s. alc. (BG); s. conc. H_2SO_4 (R–VR). — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: WGS.	**954**
Greasy blue-black fragments containing slender interlacing crystals; i. aq.; in h. aq. melts, but gives no colored sol.; sl. s. alc. (←B); sl. s. H_2SO_4 (YO Bkn (L)). — For coloring oils.	**955**

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
956	Aft-chr. [−]. H_2SO_4... BGS2. NaOH...GB.	(1) Compl. dis. (½ min.). (2) Cotton, white. (3) Wool, GBS1.	**NAPHTHOL BLUE BLACK [C].** Disazo dyestuff: *p-nitraniline* + (N_2 = 2), 1-aminonaphthol(8)-disulphonic ac.(3,6), (N_2 = 7) + *aniline*. — (1891).
957	Aft-chr. [−] BGS1→. H_2SO_4...BGS1–2. NaOH...GBS2.	(1) Compl. dis. (1½ min.). (2) Cotton, white. (3) Wool, GBS1; blue-blk.	**NAPHTHOL BLUE BLACK S [C].**
958	Aft-chr. [−]. H_2SO_4...BGS1–2. NaOH...←GB.	(1) Compl. dis. (25 sec.). (2) Cotton, alm. white. (3) Wool, ←GB dull; blk.	(1) **NAPHTHYLAMINE BLACK 10 B [By].** (2) **AMINE BLACK 10B [A].**
959	Aft-chr. [−]. H_2SO_4...(f) BGS1. NaOH...VBS1.	(1) Compl. dis. (¾ min.). (2) Cotton, alm. white. (3) Wool, GB–B Bkn (D).	**NAPHTHOL BLUE G [C].**
960	Aft-chr. [−]. H_2SO_4...(f) RV Bkn (D). NaOH...(f) VBS2.	(1) Compl. dis. (25 sec.). (2) Cotton, GBT3. (3) Wool, BG–GB, T1.	**ACID BLACK 8B [By].** (Intro. 1900).
961	Aft-chr. [−]. H_2SO_4...G gray (D). NaOH...(f) V Bkn (D).	(1) Compl. dis. (2) Cotton, alm. white. (3) Wool, GBS1; blk.	**ACID BLUE BLACK 3B [By].**
			SECTION OF BLUE
962	* H_2SO_4...VR. NaOH...R Bkn (M). Aft-chr. W gray (D).	(1) Compl. dis. (20 sec.) (2) Cotton, white. (3) Wool, BT1–B.	**AZO ACID BLUE 3B Conc. [M].** (Intro. 1904).
963	H_2SO_4...VR sl. dull. NaOH...RV Bkn (M). Aft-chr. B Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, alm. white. (3) Wool, BT1.	**DOMINGO ALIZARINE BLUE G [L].**
964	H_2SO_4...←O Bkn (D). NaOH...gray (L). Aft-chr. YG Bkn (L).	(1) Compl. dis. (1 min.). (2) Cotton, white. (3) Wool, B Bkn (L); blk.	**AZO MERINO BLACK B [C].** (Intro. 1902).
965	H_2SO_4...G Bkn (M). NaOH...B Bkn (M). Aft-chr. GY Bkn (L) dull.	(1) Compl. dis. (5 sec.). (2) Cotton, ←BT3. (3) Wool, B Bkn (M).	**DIAMOND GREEN [By].** Disazo dyestuff: (*4-amino-6-hydroxybenzenecarbonic ac.(1)* + α-naphthylamine) + 1,8-dihydroxynaphthalenesulphonic ac.(4), (N_2 = 2). — (1890).
966	H_2SO_4...BGS1. NaOH...RT2 dull. Aft-chr. N gray.	(1) Compl. dis. (30 sec.). (2) Cotton, white. (3) Wool, BT1→ sl. dull.	**SULPHON ACID BLUE R [By].** (Intro. 1897).
968	H_2SO_4...BG→ Bkn (D). NaOH...G Bkn (M). Aft-chr. BG Bkn (M).	(1) Compl. dis. (10 sec.). (2) Cotton, alm. white. (3) Wool, B Bkn (M); blk.	**ALIZARINE BLUE BLACK SB pat. [C]**
969	H_2SO_4...BGS2. NaOH...GBS1. Aft-chr. BG Bkn (M).	(1) Compl. dis. (30 sec.). (2) Cotton, (1) W gray (v.L); (2) alm. white. (3) Wool, B Bkn (M); blk.	(1) **PHENYLAMINE BLACK 4B [By].** (2) **AMINE BLACK 6B [A].** (Intro. (1) 1899; (2) 1904).
970	H_2SO_4...B→ Bkn (D). NaOH...BS2. Aft-chr. ← B Bkn (D).	(1) Compl. dis. (20 sec.). (2) Cotton, BT4. (3) Wool, BT1 dull.	**SULPHON CYANINE G [BY].** A tetrazo deriv. of benzidinesulphone-disulphonic ac. — (Intro. 1892).

* The *coordinating sequence* in this section is:

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Reddish-black powder; e. s. aq. (GB and GBT2); s. alc. (opaque, GB and GBT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Allied brands: Noir Naphthol 12 B [MLy]. — Dyeing: WGS.	**956**
Black powder; e. s. aq. (opaque, B and BT2); alm. i. alc. (GBT1); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, – or ±; NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS.	**957**
Black powder; e. s. aq. (opaque, GB and GBT2); s. alc. (GB and GBT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Ca, –; Cu (1), –, (2), ±. — Dyeing: WA.	**958**
Reddish-black powder; e. s. aq. (opaque, GB and BT2); s. alc. (VB and BT2); s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH (BV in thin layers), Cu and Ca, all –. — Dyeing: WGS.	**959**
Red-black sl. cryst. powder; e. s. aq. (opaque, GB and BT2); s. alc. (GBS2 and GBT2); s. conc. H_2SO_4 (C. gray (L)). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, – (sl. red-blue in thin layers); Cu and Ca, –. — Dyeing: WGS.	**960**
Black powder; e. s. aq. (opaque, VB and BT2–VBT2); s. alc. (B→ and BT2); s. conc. H_2SO_4 (C gray (L–D)). — Ppt. tests: H_2SO_4, Cr and Ca, all + compl.; NaOH, – (V in thin layers); Cu, ±. — Dyeing: WGS.	**961**
COLORS ON WOOL.	
Dark brown to black sl. lustrous powder; e. s. aq. (opaque, VB and VBT2); s. alc. (←VBS2 and BT2); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, – (RT1 in thin layers); NaOH, – (OR–ORS1 in thin layers); Cr, +; Cu, – or ±; Ca, –. — Dyeing: WGS.	**962**
Dark brown to black powder; e. s. aq. (opaque, BV and RVT2); e. s. alc. (RV and VR); s. conc. H_2SO_4 (RV–VR). — Ppt. tests: H_2SO_4 (OR), NaOH (VR in thin layers), Cu (VR+) and Ca, all –; Cr, + compl. — Dyeing: WGSCh.	**963**
Dark brown powder; e. s. aq. (opaque, BVS1 and VBT2); s. alc. (OYS1); s. conc. H_2SO_4 (OR Bkn (M)). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS.	**964**
V. dark brown to black powder; e. s. aq. (opaque, BS1–VBS1 and BT2→); s. alc. (GB and GBT2); s. conc. H_2SO_4 (BG–BGS1). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, – (red-blue in thin layers). — Dyeing: WCh.	**965**
Black powder; e. s. aq. (opaque, BV and BVT2); s. alc. (VB and VBT2); s. conc. H_2SO_4 (BGS1). — Ppt. tests: H_2SO_4, NaOH (R bril.), Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**966**
Very dark gray to black powder; e. s. aq. (opaque, B and BT2); s. alc. (opaque, GB and GBT2); s. conc. H_2SO_4 (GB–BG). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all –. — Dyeing: WCh.	**968**
Black or reddish-black powder; e. s. aq. (opaque, GB and BT2 v. dull); s. alc. (opaque, BS2 and BT2); s. conc. H_2SO_4 (BGS1). — Ppt. tests: H_2SO_4 (redder), NaOH and Ca, all –; Cr, + compl.; Cu, – or ±. — Dyeing: WGS, leather. — Allied brands: Phenylamine Black T [By].	**969**
V. dark gray to black powder; e. s. aq. (opaque, VB and VBT2); s. alc. (B and BT2); s. conc. H_2SO_4 (VB). — Ppt. tests: H_2SO_4, ±; NaOH and Ca, –; Cr, + compl.; Cu, – or ±. — Dyeing: WGS, WCh.	**970**

(1) H_2SO_4; (2) NaOH; (3) Aft-chr. change.

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
971	H_2SO_4...B→ Bkn (D). NaOH...BV Bkn (D). Aft-chr. B Bkn (D)-gray.	(1) Compl. dis. (20 sec.). (2) Cotton, white. (3) Wool, BT1−, dull.	**CASHMERE BLUE TG EXT. [By].**
972	H_2SO_4...(f) BV Bkn (D). NaOH...R sl dull. Aft-chr. BG Bkn (D).	(1) YT2 dis. (2) Cotton, BT3. (3) Wool, BT2+; BS1.	**SULPHON ACID BLUE G [By].** (Intro. 1902).
973	H_2SO_4...B Bkn (L)-C gray. NaOH...B Bkn (M)+. Aft-chr. G Bkn (L–M).	(1) Compl. dis. (15 sec.). (2) Cotton, GBT3. (3) Wool, B Bkn (L)-C gray; black.	**NAPHTHALENE ACID BLACK 4B [By].** (Intro. 1899).
			SECTION OF VIOLET-BLUE
974	Aft-chr. [+] W gray (D). H_2SO_4...(f) VR. NaOH...ORS2.	(1) Compl. dis. (10 sec.). (2) Cotton, white. (3) Wool, VB.	**AZO WOOL BLUE C [C].** (Intro. 1903).
975	Aft-chr. [+] G Bkn (M). H_2SO_4...←RBkn (M–L). NaOH...(f) VBS2.	(1) Compl. dis. (40 sec.). (2) Cotton, GBT3. (3) Wool, VB Bkn (D).	**CYPRUS GREEN B [A].** (Intro. 1900).
			SECTION OF BLUE-VIOLET
976	Aft-chr. [+] BG. H_2SO_4...YT1. NaOH...V Bkn (D).	(1) YT2–3 dis. in 30 sec.; (sol. deep yel.). (2) Cotton, white. (3) Wool, BV bril.	**ALIZARINE IRISOLE D Paste [By].**
977	Aft-chr. [+] ←BGS2. H_2SO_4...(f) BS1. NaOH...GB.	(1) Pale brown dis. (2) Cotton, GBT2−. (3) Wool, BV.	**PRINTING BLACK for WOOL [B].**
978	Aft-chr. [+] G gray (L). H_2SO_4...RV. NaOH...OR Bkn (M).	(1) Compl. dis. (5 sec). (2) Cotton, alm. white (bluish). (3) Wool, ←BV.	**ETHYL ACID VIOLET S4B [B].**
979	Aft-chr. [+] G Bkn (L)-gray. H_2SO_4...RV. NaOH...OR→ Bkn (M).	(1) Compl. dis. (15 sec.). (2) Cotton, alm. white; reddish. (3) Wool, BV.	**ACID NAVY BLUE 4BS [K].**
980	Aft-chr. [−] BV Bkn (D). H_2SO_4...(f) BGS1. NaOH...BVS1.	(1) Compl. dis. (20 sec.). (2) Cotton, VBT3. (3) Wool, BVS1.	**COOMASSIE NAVY BLUE 2RNX (Lev).**
981	Aft-chr. [−] BV Bkn (D). H_2SO_4 ...(f) GB Bkn (M). NaOH...BVS1.	(1) Compl. dis. (20 sec.). (2) Cotton, BVT3. (3) Wool, BVS1.	**SULPHON CYANINE 5R EXT. [By].** (Intro. 1895).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Brown-black powder; e. s. aq. (opaque, BV–V and VT2); sl. s. alc. (B); s. conc. H_2SO_4 (BS1). — Ppt. tests: H_2SO_4 (RT1 bril.), NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**971**
Reddish-black powder; e. s. aq. (opaque, B and BT2→); s. alc. (B and BT2); s. conc. H_2SO_4 (BV dull). — Ppt. tests: H_2SO_4, NaOH (RS1), Cu and Ca, all –; Cr, + compl. — Dyeing: WGS.	**972**
Dark brown to black powder; e. s. aq. (opaque, BV→ and VT2); s. alc. (VB); s. conc. H_2SO_4 (GBS1). — Ppt. tests: H_2SO_4, NaOH and Cu, all –; Cr, + compl.; Ca, ±. — Dyeing: WGS.	**973**
COLORS ON WOOL.	
Dark reddish-brown powder; e. s. aq. (opaque, V and VT2); sl. s. alc. (B and BT2); s. conc. H_2SO_4 (VR bril.). — Ppt. tests: H_2SO_4 (OR–RO), NaOH (RO in thin layers), Cr (VR–R), Cu and Ca, all –. — Dyeing: WA.	**974**
Dark gray to black powder; e. s. aq. (opaque, V and VT2); s. alc. (RV–V); s. conc. H_2SO_4 (VR–R). — Ppt. tests: H_2SO_4 (R–RT1), NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WA, aftertreated with Cu (" bril. green ").	**975**
COLORS ON WOOL.	
Violet-black paste; s. aq. (BV); s. alc. (V→); s. conc. H_2SO_4 (Y). — Mordanted wool tests: w. Cr (GBT2); w. Al (VB). — Ppt. tests: H_2SO_4 and Ca, –; NaOH, + compl.; Cr, +; Cu, ± (slow). — Printing.	**976**
Reddish-black powder; e. s. aq. (opaque, BV–V and BVT2→); sl. s. alc. (VT2→); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, NaOH (←GB), Cu and Ca, all –; Cr, + compl. — Printing.	**977**
Violet-gray (D) powder; e. s. aq. (RV and RVT2); s. alc. (BV); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4 (OR), NaOH (OR), Cr, Cu and Ca, all –. — Dyeing: WGS.	**978**
Green-black sl. lustrous powder; e. s. aq. (opaque, RV bril. and RVT2); s. alc. (BV and BVT2); s. conc. H_2SO_4 (VR bril.). — Ppt. tests: H_2SO_4, (R+), NaOH (RS1), Cr, Cu and Ca, all –. — Dyeing: WGS.	**979**
Black powder; s. aq. (V); e. s. alc. (VB); s. conc. H_2SO_4 (BS1 dull). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all ±. — Dyeing: WGS.	**980**
Greenish-black powder; e. s. aq. (←V); s. alc. (VB); s. conc. H_2SO_4 (BS2). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH and Cu, –; Ca, ±. — Dyeing: WA (Cr).	**981**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14). (3) Aft-chr. change, [+ or [−]. See T.16).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET
982	H_2SO_4...VR. NaOH...VR Bkn (M)→. Aft-chr. [−] V Bkn (D)–black.	(1) Compl. dis. (90 sec.). (2) Cotton, BT3. (3) Wool, V→.	**ACID ALIZARINE BROWN RH EXT. [M].**
983	H_2SO_4...←R Bkn (M). NaOH...R Bkn (M–D). Aft-chr. [−].	(1) Compl. dis. (20 sec.). (2) Cotton, VT3. (3) Wool, V Bkn (M)→.	**PERI WOOL BLUE B pat. [C].** (Intro. 1901).
984	H_2SO_4...G Bkn (D). NaOH...B Bkn (D). Aft-chr. [−] BV Bkn (D).	(1) Compl. dis. (2) Cotton, white. (3) Wool, V Bkn (M)→.	**BRILLIANT BLACK B [B]** Disazo dyestuff: [*2-aminodisulphonic ac.*(*6,8*) + (N_2 = 4) 1-aminonaphthalene] + naphthol(2)-disulphonic ac.(3,6), (N_2 = 1). — (1885).
985	H_2SO_4...G Bkn (M). NaOH...B Bkn (M). Aft-chr. [+] ←G Bkn (L).	(1) Compl. dis. (30 sec.). (2) Cotton, BT3–dull. (3) Wool, V Bkn (M–L)–gray.	**DIAMOND BLACK F [By].** Disazo dyestuff: (*1-amino-4-hydroxybenzenecarbonic ac.*(3) + 1-aminonaphthalene,(N_2 = 4)) + naphthol (1)-sulphonic ac.(4), (N_2 = 2). — (1889).
986	H_2SO_4...BGS1. NaOH...B–BV Bkn (D). Aft-chr. [+] G gray (D).	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, V Bkn (D+)–gray.	**ANTHRACENE ACID BLACK ST [C].** "Secondary disazo dyestuff from diazosalicylic ac."—(Intro. 1895).
987	H_2SO_4...(f) ←GBS1. NaOH...(f) ROS1. Aft-chr. [+] R Bkn (v.D).	(1) Compl. dis. (25 sec.). (2) Cotton, white. (3) Wool, VS1 bril.	**ALIZARINE LANACYL VIOLET B [C].**
988	H_2SO_4...GB. NaOH...VT1. Aft-chr. [+] R Bkn (L).	(1) Compl. dis. (30 sec.). (2) Cotton, BT3. (3) Wool, VT2+ sl. dull.	**COLUMBIA BLUE R [A].** Disazo dyestuff: 1-aminonaphthol (8)-sulphonic ac.(4), or disulphonic ac.(2,4) + *benzidine* + another naphtholsulphonic ac. — (1894).
989	H_2SO_4...(f) ←GBS1. NaOH...(f) blk. Aft-chr. [+] ←BG.	(1) Compl. dis. (90 sec.); (sol. red). (2) Cotton, alm. white. (3) Wool, V Bkn (D).	**ANTHRACENE CHROMATE GREEN B [C].**
			SECTION OF RED-VIOLET
990	Aft-chr. [+] ←BG dull. H_2SO_4...VR. NaOH...←VR sl. dull.	(1) Compl. dis. (20 sec.). (2) Cotton, white. (3) Wool, RV dull.	**CHROME FAST GREEN G [I].**
991	Aft-chr. [+] BG–GB Bkn (M). H_2SO_4...GS2. NaOH...GBS1.	(1) Compl. dis. (25 sec.). (2) Cotton, BVT3. (3) Wool, RV Bkn (M)+.	**ALIZARINE BLACK BAYER FB [By].**
992	Aft-chr. [+] YOBkn (M). H_2SO_4...BGS2. NaOH...VBS2.	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Wool, ←RV Bkn (M).	**SULPHON BLACK R [By].** (Intro. 1895).
993	Aft-chr. [+] alm. blk. H_2SO_4...(f) RV. NaOH...(f) VR.	(1) Compl. dis. (45 sec.). (2) Cotton, VT3. (3) Wool, RVS1→.	**ANTHRACENE CHROME BLUE G [C].** (Intro. 1904).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark brown to black powder; e. s. aq. (opaque, RV and RVT2); s. alc. (VRS1 and VRT2); s. conc. H_2SO_4 (RV→). — Ppt. tests: H_2SO_4, + (RT1); NaOH, –; Cr, + compl.; Cu, ±; Ca, +. — Dyeing: WGSCh.	982
Brownish-black powder; e. s. aq. (RV→); s. alc. (←BV); s. conc. H_2SO_4 (R–VR). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: WGS.	983
	984
Dark reddish-gray powder; e. s. aq. (opaque, RVS1 and RVT2); s. alc. (opaque, RV and RVT2); s. conc. H_2SO_4 (←BG). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all + compl.; NaOH, –. — Allied brands: Diamineral Black FR [By]. — Dyeing: WGSCh.	985
V. dark blue-gray powder; e. s. aq. (opaque, RV and RVT2); i. alc.; s. conc. H_2SO_4 (BG). — Ppt. tests: H_2SO_4, NaOH and Cu, all –; Cr and Ca, + compl. — Dyeing: WGSCh.	986
Brown-black powder; e. s. aq. (opaque, RV bril and RVT2→); s. alc. (VR); s. conc. H_2SO_4 (BG–GB). — Ppt. tests: H_2SO_4, NaOH (R), Cu and Ca, all –; Cr, + alm. compl., filiform. — Dyeing: WA.	987
Brown-black powder; e. s. aq. (opaque, RV and RVT2–VRT2); sl. s. alc. (RVT2); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, +; NaOH (redder), Cu and Ca, all –; Cr, + compl. — Allied brands: Chicago Blue 4R [A]. — Dyeing: CD.	988
Dark brown powder; e. s. aq. (opaque, VRS1→ and VRT2); s. alc. (R); s. conc. H_2SO_4 (BG–GB). —Ppt. tests: H_2SO_4 (ROS1 in thin layers), NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: WCh (single bath).	989
COLORS ON WOOL.	
Reddish-black powder; e. s. aq. (opaque, VR bril. and ←VRT2); alm. i. alc. (VRT2); s. conc. H_2SO_4 (VR, v. bril.). — Ppt. tests: H_2SO_4 (R), NaOH, Cu and Ca, all –; Cr, + (bril. red in thin layers). — Dyeing: WGSCh.	990
Dark brown to black powder; e. s. aq. (opaque, VR and ←VRT2); s. alc. (VR and RVT2→); s. conc. H_2SO_4 (YG–G). — Ppt. tests: H_2SO_4 and Cu, ±; NaOH, –; Cr and Ca, + compl. — Dyeing: WGSCh.	991
Black powder; e. s. aq. (opaque, RV and RVT2); s. alc. (opaque, VB→ and VBT2); s. conc. H_2SO_4 (BGS1–GBS1). — Ppt. tests: H_2SO_4, Cr, Ca and NaOH, all + compl.; Cu, +. — Dyeing: WA.	992
Brown-black powder; e. s. aq. (opaque, VR and ←VRT2); e. s. alc. (opaque, VR bril. and VRT2 bril.); s. conc. H_2SO_4 (V–VS1→). — Ppt. tests: H_2SO_4, Cu and Ca, all ± or +; NaOH, –; Cr, +. — Dyeing: WGSCh.	993

No.	COORDINATION TESTS. (1) Aft-chr. change, ([+] or [−]. See T.16). (2) H_2SO_4 (T.13). (3) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Sect. T.12.	Trade name. Constitutional name. Date of discovery or introduction.
994	Aft-chr. [+] BG Bkn (M). H_2SO_4...(f) RV sl. dull. NaOH...B Bkn (M).	(1) YOT3 dis. (sol. OY). (2) Cotton, RVT3. (3) Wool, RV Bkn (M); blk.	**ANTHRACENE CHROMATE BLACK DR [C].**
	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) Wool color in Test 5. (3) NaOH (T.14).	(1) Color discharge in Test 8. (2) Cotton color in Test 5. (3) Aft-chr. effect in Test 16.	
			SECTION OF GRAY
995	H_2SO_4...(f) G Bkn (M). Wool, C gray (D); blk. NaOH...(f) C gray (D).	(1) Compl. dis. (1 min.). (2) Cotton, alm. white. (3) Aft-chr. unchanged.	**ALIZARINE BLUE BLACK B [C].**
996	H_2SO_4...W gray (M)−OY Bkn (L). Wool, V gray (M). NaOH...R Bkn (v.L).	(1) Compl. dis. (20 sec.). (2) Cotton, BT3 dull. (3) Aft-chr. Y Bkn (L).	**PLUTO BLACK G [By].**
997	H_2SO_4...C gray (D). Wool, N gray (D); blk. NaOH...C gray (D).	(1) Compl. dis. (25 sec.). (2) Cotton, white. (3) Aft-chr. GY Bkn (D)−.	**AMINE BLACK 4B [A].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Red-black sl. lust. powder; e. s. aq. (opaque, RV–VR and ← VRT2); s. alc. (RVS1 and RVT2 →); s. conc. H_2SO_4 (RV). — Ppt. tests: H_2SO_4, ± ; NaOH and Cu, − ; Ca, − or ± ; Cr, + compl. — Dyeing: WCh (single bath).	**994**
COLORS ON WOOL.	
YO Bkn (v.D) powder; e. s. aq. (opaque, VBS1 and VBT2); s. alc. (BGS1 + and BGT2); s. conc. H_2SO_4 (G →). — Ppt. tests: H_2SO_4, Cu and Ca, all − or ± ; NaOH, − ; Cr, + compl. — Dyeing: WCh.	**995**
V. dark brown-black cryst. powder; e. s. aq. (opaque, dull red-brown); i. alc.; s. conc. H_2SO_4 (RV Bkn (D)). — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, +. — Dyeing: CD.	**996**
Brown-black powder; e. s. aq. (opaque, GB and GBT2); e. s. alc. (opaque, VB dull and BT2); s. conc. H_2SO_4 (BGS1 +). — Ppt. tests: H_2SO_4 and Cr, + compl.; NaOH, Cu and Ca, all −. — Dyeing: WGS.	**997**

DYES OF GENUS IV, PYRONINE, OXYKETONE, THIO- AND NATURAL

(WHOSE COLOR ON WOOL IS NOT DISCHARGED BY RONGALITE

DIVISION A.—DYES COLORING COTTON TO

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
			ALIZARINE GRENAT R paste [M].
			PYRONINE G [L].
			NAPHTHALENE RED [Kahlbaum].
			SECTION OF RED
998	H_2SO_4...OS1. NaOH...R.	(1) Abt. ½ dis. (2 min.); pers., compl. ret. (2) Cotton, VRT2. (3) Wool, ←R (L) bril.	(1) **CYANOSINE** sol. in Alcohol [M]. (2) **VIOLAMINE G** [M]. (1) Alkali salt of tetrabromdichlorfluoresceinemethylester. — (2) Sodium sulphonate of dimesidyl-m-aminophenolphthaleine. ((1) 1876).
999	H_2SO_4...OY. NaOH...RT1.	(1) ½ dis. (2 min.). (2) Cotton, ←RT2. (3) Wool, ←RT1 bril.	**RHODAMINE 4G** pat. [By].
1000	H_2SO_4...OYT1. NaOH...RT1.	(1) Abt. ⅘ dis. (2 min.); pers., ⅓ ret. (2) Cotton, RT2+. (3) Wool, RT1 bril.	**BAYER RHODAMINE SG** [By].
1001	H_2SO_4...YT1. NaOH...VR-R.	(1) Abt. ½ dis. (2 min.); sol. first red, then colorless. (2) Cotton, VRT2. (3) Wool, RT1+, v. bril.	(1) **RHODAMINE G EXT.** [B]. (2) " **B** [C]. (3) " **B EXT.** [B]. (4) **ROSAZEINE B EXT.** [M]. (1) Triethylrhodamine (basic hydrochloride). — (2) Phthaleine of diethylmetaminophenol (basic hydrochloride). — ((1) 1891; 1887; 1888).
1002	Same as above.	Same as above.	**RHODAMINE 3B** [B]. Ethyl ester of tetraethylrhodamine hydrochloride. — (1891).

BENZENYL, AZO, AND INDANTHRENE DERIVATIVES, COLORING MATERIALS.

TO A TONE WEAKER THAN A TINT 2 IN TEST 8.)

TINT 2 OR A DEEPER TONE IN TEST 5.

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 1102 for description.	
See No. 136 for description.	
See No. 6 for description.	
COLORS ON WOOL.	
Red powder; r. d. s. aq. (violet-red w. sl. fluor.); e. s. alc. (violet-red); s. conc. H_2SO_4 (YO). — Wool unchanged in after-chrome test. — Ppt. tests: tannin, –; H_2SO_4, + compl.; Cr, + compl.; Cu, – or ±; Ca, –; NaOH, –. — Spectrum: (1) 13.36, (2) 13.38 (aq.). — Dyeing: WGS, SS. — Allied brands: (1) Cyanosine, Spirit Soluble [K] [S]; Cyanosine A Extra (Mo); (2) Acid Rosamine A [M].	**998**
Dull red to VR, Bkn powder; e. s. aq. (RT2) w. strong yel. fluor.; e. s. alc. (←RT2) w. strong yel. fluor; s. conc. H_2SO_4 (OYT1). — Wool unchanged in after-chrome test. — Ppt. tests: tannin +, compl; H_2SO_4, +; Cr, –; Cu, –; Ca, –; NaOH, + compl. (YO). — Spectrum: *12.63*, 14.77 (aq). — Dyeing: WA, SA, CT.	**999**
R Bkn (M) powder; e. s. aq. (RT2), or in alc. (←RT2 w. strong yel. fluor.); s. conc. H_2SO_4 (OY). — Wool alm. unchanged in after-chrome test. — Ppt. tests: tannin, + compl.; H_2SO_4, +; NaOH, + compl. (YO); Cr, –; Cu, –; Ca, –. — Spectrum: *12.83*, 15.13 (aq.).	**1000**
(1) YGS3 sl. lustrous, (3,4) YGS2 v. lustrous, powders; e. s. aq. (OR and ←RT1) w. yellowish brown fluor.; e. s. alc. (←RT1 w. yellow fluor.); s. conc. H_2SO_4 (GY). — Wool VRT1+ in after-chrome test. — Ppt. tests: tannin, (1,3) + compl.; H_2SO_4, (1,3,4) and NaOH, (1,3,4), –; Cr, –; Cu, –; Ca, –. — Spectrum: (4) *11.45*, 13.44 (aq.); (1) *11.48*, 13.66; (2) *11.43*, 13.57; (3) *11.44*, 13.57. — Dyeing: WA, SA. — Allied brands: (1) Rhodamine G ext. [I]; (2) Rhodamine B and B Ext. [I]; (2) Rhodamine O, Extra B, B Ext. [M]; Safraniline [G].	**1001**
R Bkn (D) powder (purple streak); e. s. aq. (←RT1 bril. w. orange fluor.). — Spectrum: *11.27*, 13.45 (aq.). Description otherwise same as for No. 1001 above.	**1002**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test. 5.	Trade name. Constitutional name. Date of discovery or introduction.
1003	H_2SO_4...(f) BG→; (cl) alm. blk. NaOH...RT1+.	(1) ORT1− dis. (2 min.). (2) Cotton, RT3+. (3) Wool, R−.	**HESSIAN PURPLE N [A].** Disazo dyestuff: *4,4′-diaminostilbene-disulphonic ac.*(*2,2*) + 2 mol. β-naphthylamine,(N_2 : NH_2 = 1 : 2). — (1886).
1004	H_2SO_4...GBS2− blk. NaOH...RT1.	(1) ROT2 dis. (2 min.). (2) Cotton, VR-R, T1. (3) Wool, R−.	**DIAMINE FAST SCARLET 8BN [C].**
1005	H_2SO_4...(f) GBS1. NaOH...Unchanged.	(1) O-YO, T2 dis. (2 min.). (2) Cotton, VRT1. (3) Wool, RT1+.	**RENOL BORDEAUX (t.M).**
1006	H_2SO_4...(f) BS1. NaOH...R dull.	(1) O-OT1 dis. (2 min.). (2) Cotton, VRT1+. (3) Wool, R→ sl. dull.	**OXAMINE CLARET B [B].**
1007	H_2SO_4...(f) BV. NaOH...R-VR, S1.	(1) RO-O, T1 dis. (2 min.). (2) Cotton, RT2. (3) Wool, RT1.	**DIRECT PINK G Conc. [SS].**
1007-1	H_2SO_4...(f) V; (cl) alm. blk. NaOH...VR, sl. Bkn.	(1) OT2 dis. (2 min.). (2) Cotton, ←RT2. (3) Wool, ←RT1.	**DIRECT PINK B Conc. [SS].**
1008	H_2SO_4...(f) black. NaOH...RS1.	(1) ROT1 dis. (2 min.). (2) Cotton, VRT1. (3) Wool, R→.	**DIAMINE VIOLET RED [C].**
			SECTION OF ORANGE-RED
1009	H_2SO_4...R. NaOH...R→.	(1) VR-R, T1 dis. (2 min.); (sol. VRT2). (2) Cotton, VRT2−. (3) Wool, OR v. bril.	**OPALINE SCARLET RS [I].**
1010	H_2SO_4...R. NaOH...RO.	(1) RT2 dis. (2 min.). (2) Cotton, VRT2−. (3) Wool, OR→ v. bril.	**BRILLIANT CHROME RED paste [By.]**
1011	H_2SO_4...(1) OYT1; (2) OY. NaOH...OYT1.	(1) ⅔ dis. (2 min.); pers., abt. ½ ret. (2) Cotton, VR-R, T2+. (3) Wool, ORT1 bril.	(1) **RHODAMINE 6G [B].** (2) **" 6G EXT. [B].**
1012	H_2SO_4...←YT1. NaOH...←RT1.	(1) ⅔ dis. (2 min.); pers., good ret. (2) Cotton, VRT2. (3) Wool, ORT1, *v. bril.*	**IRISAMINE G [C].** Ethyl ester of dimethylhomorhodamine. — (1895).
1013	H_2SO_4...G Bkn (L). NaOH...ROT2−.	(1) OT3 dis. (2 min.). (2) Cotton, VRT2→. (3) Wool, ORT2.	**CHLORAMINE RED 8BS [By].**
1014	H_2SO_4...(cl) GBS2− black; (f) GB. NaOH...RT1.	(1) v. sl. dis. (2 min.). (2) Cotton, RT2-VRT2. (3) Wool, ORT1.	**ROSAZURINE G [By].** Diazo dyestuff. — Ethyl-β-naphthylamine-7-sulphonic ac.(N_2 = 1) + *o-tolidine* + β-naphthylamine-sulphonic ac.(7), (N_2 = 1). — (1886).
1015	H_2SO_4...GBS1. NaOH...ORT1.	(1) ⅔ dis. (2 min.). (2) Cotton, VRT1→. (3) Wool, ←ORT1.	**DIPHENYL RED 8B [Kell].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark brown powder; s. aq. (OR and RO turbid); s. alc. (RO); s. conc. H_2SO_4 (←GB). — Wool *OS1* after-chrome test. — Ppt. tests: H_2SO_4, + compl. (B Bkn (D)); NaOH, –; Cr, + compl. (R Bkn (M)); Cu, – (RT1 dull); Ca, –. — Dyeing: CD. — Allied brand: Hessian Purple N [L] [SB] [By].	**1003**
R Bkn (D) powder; e. s. aq. (OR); d. s. alc. (RT3); s. conc. H_2SO_4 (GB→). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, – (v. dark red); NaOH, + compl.; Cr, + compl.; Cu, + compl. (R); Ca, + compl. — Dyeing: CD.	**1004**
Dark reddish-brown powder; e. s. aq. (R and RT2); sl. s. alc. (R–VR, T1); s. conc. H_2SO_4 (GBS1). — Wool, RT1 sl. Bkn in after-chrome test. — Ppt. tests: H_2SO_4, – (blue-black); NaOH, +; Cr, + compl.; Cu, –; Ca, + compl.	**1005**
Violet-gray powder; e. s. aq. (R and RT2); sl. s. alc. (RT2); s. conc. H_2SO_4 (B). — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (R–VR, S1); NaOH, +; Cr, +; compl.; Cu, –; Ca ±. — Dyeing: CD.	**1006**
V. dark Bkn red powder; e. s. aq. (OR and RT2); s. alc. (ORT1+); s. conc. H_2SO_4 (BV). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl; NaOH, ± (R→); Cr, + compl.; Cu, –, (RO); Ca, – or ±. — Dyeing: CD.	**1007**
S. conc. H_2SO_4 (VR–RV). Description otherwise as for No. 1007 above.	**1007-1**
Brown-black powder; e. s. aq. (R→ and RT2); s. alc. (ORT1); s. conc. H_2SO_4 (RV, Bkn (D)). — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (VRS2); NaOH, + compl. (VRS2→); Cr, + compl. (VRS2); Cu, + compl. (VRS2→); Ca, + compl. (VRS2→). — Dyeing: CD.	**1008**
COLORS ON WOOL.	
←OR powder; e. s. aq. (OR) w. sl. fluor.; e. s. alc. (red tint) w. strong fluor.; s. conc. H_2SO_4 (R–VR, bril.). — Wool alm. unchanged in after-chrome test. — Ppt. tests: tannin, ±; H_2SO_4, ±; NaOH, –; Cr, +; Cu, – or ±; Ca, +. — Spectrum: *11.49*, 13.60, 15.47 approx. (aq.) — Dyeing: WGS; paper.	**1009**
R–OR paste; aq. filtrates (OR, RO and ORT2); s. alc. (O) w. sl. fluor.; s. conc. H_2SO_4 (R→). — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, –; NaOH, –; Cr, +; Cu, – or ±; Ca, –.	**1010**
(1) OS2, (2) ORS2 powders; e. s. aq. (1) (O→ and ROT2→), (2) (RO – O and OT) w. strong yel. fluor.; e. s. alc. (1) (ROT→), (2) (OT) w. strong yel. fluor.; s. conc. H_2SO_4 (2) (←GY), (1) (GYT1). — Wool RT2, sl. dull, after-chrome test. — Ppt. tests: (1) tannin, + compl.; (1,2) H_2SO_4, –; NaOH, (1) ± (OR), (2) + (R); (1,2) Cr, –; Cu, –; Ca, –. — Spectrum: (1) 13.12 (aq.), 12.76 (alc.); (2) 13.16 (aq.), 12.83 (alc.). — Dyeing: WA, SA, CT.	**1011**
O Bkn (D) powder; e. s. aq. (←RT1, bril., and ←RT2) w. sl. fluor.; e. s. alc. (VR→, bril.) w. yel. fluor.; s. conc. H_2SO_4 (←YG). — Wool in after-chrome test: RT2, duller. — Ppt. tests: tannin, + compl.; H_2SO_4, – (OR); NaOH, Cr, Cu and Ca, all –. — Spectrum: *12.36*, 14.91 (?) (aq.). — Dyeing: CT. — Allied brands: Irisamine G [B]; Rhodin 3G [BCF].	**1012**
RV Bkn (D) mottled powder; e. s. aq. (R, OR→ and ORT2); i. alc.; s. conc. H_2SO_4 (GB→). — Wool YOT2 in after-chrome test. — Ppt. tests: H_2SO_4, –, (darker); NaOH, + compl.; Cr, + compl; Cu, – (darker); Ca, + compl. — Dyeing: CD.	**1013**
Very dark brown powder; e. s. aq. (R, R→ and ORT1); s. alc. (←RO); s. conc. H_2SO_4 (GB). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (RS1); NaOH, + (slow); Cr, + compl.; Cu, ±; Ca, + compl. — Dyeing: CD. — Allied brand: Rosazurine G [L].	**1014**
R Bkn (D–M) powder; e. s. aq. (R, OR and ORT2); sl. s. alc. (R–VR, T3); s. conc. H_2SO_4 (B). — Ppt. tests: H_2SO_4, –; NaOH, Cr, Cu, and Ca, all + compl. — Dyeing: CD.	**1015**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1016	H_2SO_4...(f) ←BS1. NaOH...OR–ORS1.	(1) V. sl. dis. (2 min.). (2) Cotton, ORT2. (3) Wool, ←OR sl. dull.	**DIAMINE RED NO [C].** Diaszo dyestuff: β-naphthylaminosulphonic ac.(6), (N_2= 1) + *ethoxybenzidine* + β-naphthylaminosulphonic ac.(7), (N_2= 1). — (1887).
1017	H_2SO_4...(f) ←BS1. NaOH...OR→.	(1) OR–ORT1 dis. (2 min.). (2) Cotton, ←RT2+. (3) Wool, OR.	**DELTA PURPURINE 5B [A].** Disazo dyestuff: 2-naphthylamine-7-sulphonic ac.(N_2= 1) + *o-tolidine* + 2-naphthylamine-6-sulphonic ac. (N_2=1). — (1886).
1018	H_2SO_4...(f) B–GB'S1. NaOH...OR→.	(1) ORT1 dis. (2 min.). (2) Cotton, RT2. (3) Wool, OR.	**BENZOPURPURINE B [A].** Disazo dyestuff: *o-tolidine* + 2 mol. 2-naphthylamine-6-sulphonic ac. (N_2=1). — (1885).
1019	As above.	As above.	**BRILLIANT CONGO R [A].** Disazo dyestuff: 2-naphthylamine-3, 6-disulphonic ac. (N_2 = 1) *o-tolidine* + 2-naphthylamine-6-sulphonic ac. (N = 1. — (1886).
1020	H_2SO_4...(f) BS1. NaOH...OR.	(1) Abt. ⅔ dis. (2 min.). (2) Cotton, RT1. (3) Wool, OR.	(1) **BENZOPURPURINE 4B** [Lev]. (2) " **4B** [A]. (3) " **4B Conc.** [SS]. (4) **DIANIL RED 4B Conc.** [M]. (5) **SUBSTANTIVE RED #2** [PK]. (1) Disazo dyestuff: *o-tolidine* + 2 mol. 1-naphthylamine-4-sulphonic ac.(N_2= 2). — (1885).
1021	As above.	As above.	**BRILLIANT PURPURINE R [A].** Disazo dyestuff: 2-naphthylamine-3,6-disulphonic ac.(N_2= 1) + *o-tolidine* + 1-naphthylamine-4-sulphonic ac.(N_2= 2).
1022	H_2SO_4...(f) VBS1. NaOH...OR→.	(1) ROT1 dis. (2 min.). (2) Cotton, RT2+. (3) Wool, OR.	**DIAMINE BRILLIANT SCARLET S [C].** Azo dyestuff. — (Intro. 1901).
1023	H_2SO_4...(f) VS2. NaOH...(f) (OS2).	(1) ←YT1 dis. (2 min.), (Y sol.). (2) Cotton, ORT2+. (3) Wool, (1) ←OR bril.; (2) OR bril.	(1) **CHLORAMINE RED B** [S]. (2) **BENZO SCARLET BC** [By].
1024	H_2SO_4...(f) RV Bkn (D). NaOH...ORS1.	(1) OYT1 dis. (2 min.). (2) Cotton, ROT2–OT2. (3) Wool, ORS1.	**BENZO BROWN [By].** Tetrakisazo dyestuff: 2 mol. sulphanilic ac. + 1 mol. Bismarck Brown. (1887).
1025	H_2SO_4...(f) black. NaOH...Unchanged.	(1) No dis. (2 min.). (2) Cotton, ←OR.	**NITROSAMINE RED [B] (Developed on Cotton).** Azo dyestuff: *p-nitraniline* + β-naphthol.
			SECTION OF RED-ORANGE
1026	H_2SO_4...R. NaOH...←O.	(1) ROT2 uneven dis. (2 min.). (2) Cotton, ROT2–. (3) Wool, RO.	**SUDAN II [A].** Azo dyestuff: xylidine + β-naphthol, (N_2= 1).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). (Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark brown powder; e. s. aq. (OR and ORT2); s. alc. (RO); s. conc. H_2SO_4 (GB). Wool OS1 in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (VRS2); NaOH, +; Cr, + compl. (red); Cu, + compl. (VRS1); Ca, +. — Dyeing: CD.	**1016**
Brown powder; e. s. aq. (OR, O and OT2); s. alc. (O); s. conc. H_2SO_4 (←B). — Wool RO dull in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (dark brown); NaOH, –; Cr, + compl.; Cu, + (slowly); Ca, –. — Dyeing: CD. — Allied brands: Delta Purpurine 5B [By]. [Lev.]; Diamine Red B [A] [By] [L].	**1017**
Cu, Ppt. ±, (slowly). Description otherwise as No. 1017 above.	**1018**
H_2SO_4 no ppt., (v. dark sol.); Cu and NaOH, –. Description otherwise as for No. 1017 above.	**1019**
(1,5) R Bkn (M–D), (2,3) ROS3, (4) R–OR, Bkn (D), powders; all s. aq. (OR, RO→ and ROT2); sl. s. alc. (1,2,3,4) (OT1+), (5) (ROT2); s. conc. H_2SO_4 (B). — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH, (1) ±, (2–5) + compl.; Ca, ±, (1) +, (2,4,5) compl. — Dyeing: CD. — Allied brands: Benzopurpurine 4B [By] [L] [O] [t.M] [S]; Cotton Red 4B [B]; Sultan 4B [H].	**1020**
Description as for No. 1020 above. — Allied brands: Brilliant Purpurine R [By] [L].	**1021**
R–OR, S2 powder w. sl. green lustre; e. s. aq. (←OR, O and OT2); v. sl. s. alc. (ROT3); s. conc. H_2SO_4 (B). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, – (darker); NaOH, + compl.; Cr, + compl.; Cu, ± (slow); Ca, + compl. — Dyeing: CD.	**1022**
ORS2 powder; e. s. aq. (←OR, RO→ and ROT2); sl. s. alc. (OT1+); s. conc. H_2SO_4 (RV). — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, – (v. dark); NaOH, +; Cr, + compl.; Cu, –; Ca, –. — Dyeing: CD.	**1023**
Black powder; e. s. aq. (ROS1 and YOS1); s. alc. (dull O); s. conc. H_2SO_4 (←RV, Bkn (D)). — Ppt. tests: H_2SO_4, + compl.; NaOH, +; Cr, + compl.; Cu, +; Ca, +. — Dyeing: CD. Allied brands: Benzo Brown [A] [Lev].	**1024**
Dyeing: CDv with β-naphthol. This description applies to the color as developed on cotton by the formula of Lehne's " Tabellarische Uebersicht." — Synonym: Para Red.	**1025**
COLORS ON WOOL.	
RO–ROS1 powder; i. aq.; s. alc. (←YO); s. conc. H_2SO_4 (VR–R, T1). — Wool alm. unchanged in after-chrome test. — Dyeing: Fats, spirit varnishes and lakes. — Allied brands: Red B [B] [Fi]; Red GG fat soluble [F]; Scarlet G [CJ].	**1026**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1027	H_2SO_4...←OYT1+. NaOH...OYT1 dull.	(1) YO–OYT2 dis. (2 min.); pers. ret. ORT2. (2) Cotton, ROT2. (3) Wool, ROT1.	**ACRIDINE RED B [L].** Di(?)ethyldiaminodiphenylcarbidrideoxide chloride.
1028	H_2SO_4...(cl) black, (f) BVS2. NaOH...OR.	(1) YOT2 dis. (2 min.). (2) Cotton, RT2. (3) Wool, ROS1.	**DIAZO BRILLIANT BLACK R [By].** A disazo benzidine (?) dyestuff. (Intro. 1893).
			SECTION OF ORANGE
1029	H_2SO_4...(f) VRS1. NaOH...OR.	(1) Abt. ½ dis. (2 min.). (2) Cotton, (1) YO→; (2) OY–YO dull. (3) Wool, O→.	(1) **RENOL ORANGE G [t.M].** (2) **DIANIL ORANGE N [M].**
1030	H_2SO_4...(f) YO, Bkn (D). NaOH...(f) YOS1; (cl) OS2.	(1) YOS1 dis. (2 min.). (2) Cotton, O–YO, S1 dull. (3) Wool, O, S1–2 (rich brown).	**BISMARCK BROWN EE [C].**
1031	H_2SO_4...OYT1. NaOH...OYT1 dull.	(1) OYT2+ dis. (2 min.); pers. ret. compl.→. (2) Cotton, RT2+. (3) Wool, OT1.	**ACRIDINE RED BB [L].** Di(?)ethyldiaminodiphenylcarbidrideoxide chloride, perhaps mixed w. tetramethyldiaminooxanthrene. — (1891).
1032	H_2SO_4...YT1. NaOH...←YOT1+.	(1) YOT2 dis. (2 min.); pers. ret. compl. (2) Cotton, OT1→. (3) Wool, O–YO, sl. dull.	**FLAVOPHOSPHINE R Conc. New [M].**
1033	H_2SO_4...(f) BS2. NaOH...O.	(1) Abt. ½ dis. (2 min.). (2) Cotton, OT2+. (3) Wool, O.	(1) **CONGO ORANGE R [A].** (2) **DIAMINE ORANGE F [C].** (1) Disazo dyestuff: 2-naphthylamine-3,6-sulphonic ac. (N_2= 1) + *tolidine* + phenetol (N_2= 4). (1889).
1034	H_2SO_4...(f) V Bkn (D). NaOH...O.	(1) YOT2 dis. (2 min.). (2) Cotton, OT1. (3) Wool, O sl. dull.	**ZAMBESI BROWN 4R [A].**
1035	H_2SO_4...(f) RVS1. NaOH...OR dull.	(1) YOT1→ dis. (2 min.). (2) Cotton, YO–O, T1 dull. (3) Wool, O–YO sl. dull.	**RENOL BROWN RG Conc. [t.M].**
1036	H_2SO_4...(f) N gray (D). NaOH...O.	(1) Abt. ½ dis. (2 min.). (2) Cotton, OT1+. (3) Wool, O.	**TOLUYLENE ORANGE RR [O].** Disazo dyestuff: *2,6-tolylenediaminesulphonic ac.*(*4*) + 2 mol. β-naphthylamine (N_2= 1). — (1891).
			SECTION OF YELLOW-ORANGE
1037	H_2SO_4...(f) ←VR; (cl) blk. NaOH...R.	(1) Abt. ½ dis. (2 min.). (2) Cotton, YO–OY, T1 sl. dull. (3) Wool, YOS1 sl. dull.	**FORMIC ORANGE R [G].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YGS2 powder; e. s. aq. (ORT1+) w. strong yel. fluor.; e. s. alc. (RT2) w. Y fluor.; s. conc. H_2SO_4 (pale Y). — A mixture. — Wool ORT2 sl. dull in after-chrome test. — Ppt. tests: tannin, + compl.; H_2SO_4, –; NaOH, – or ±, (alm. colorless sol.); Cr, –; Cu, –; Ca, –. — Dyeing: CT. — Allied brands: Acridine Red B, BB [L].	**1027**
Green-black sl. lustrous powder; e. s. aq. (OR Bkn (D)); s. alc. (O); s. conc. H_2SO_4 (VB→). — Wool YOS2 in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (VS2); NaOH, ± (OR); Cr, + compl.; Cu, – or ±; Ca, ±. — 1% acetic ac. changes the dyed cotton to GBS2. — Wool BV Bkn–blk and cotton VB Bkn (D) by development Test 20. — Dyeing: CDv.	**1028**
COLORS ON WOOL.	
(1) ORS1+, (2) O Bkn (D) powder; s. aq. (O→ and OY); s. alc. (YO and OY→); s. conc. H_2SO_4 (VRT1). — Wool YOS2 in after-chrome test. — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; NaOH and Ca, +. — Alm. unchanged in Test 20. — Dyeing: CD, CDV.	**1029**
BG-black powder; s. aq. (ORS1, YO and OYT2); s. alc. (O–OS1); s. conc. H_2SO_4 (YOS2). — Wool YOS2 in after-chrome test. — Ppt. tests: H_2SO_4, +; NaOH, + compl.; Cr, –; Cu, –; Ca, –. — Dyeing: CT.	**1030**
V. dark YG powder; e. s. aq. (RO and ORT1) w. strong yel. fluor.; s. alc. (ORT1) w. strong yel. fluor.; s. conc. H_2SO_4 (GY) w. greenish fluor. — Wool alm. unchanged (duller →) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, –; NaOH, ± (Y); Cr, –; Cu, –; Ca, –. — Dyeing: CT, WA. — Allied brands: Acridine Red B, 3B (L) (SB).	**1031**
ROS3 powder; e. s. aq. (O, OY and OYT2); s. alc. (YO); s. conc. H_2SO_4 (GYT1 +) w. G fluor. — Wool YO Bkn (L) in after-chrome test. — Ppt. tests: H_2SO_4, – (RO); NaOH, ± (slow); Cr, –; Cu, –; Ca, –. — Dyeing: CT.	**1032**
(1) OR→, (2) RO, dull powders; s. aq. (turbid ←O and YOT1); s. alc. (YO); s. conc. H_2SO_4 (BS1). Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (dark brown); NaOH, –; Cr, + compl.; Cu, –; Ca, –. — Dyeing: CD. — (1) Allied brands: Congo Orange R [By] [L] [RF].	**1033**
Dark brown powder; e. s. aq. (ORS1 and pale OS1); s. alc. (YO); s. conc. H_2SO_4 (V). — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (dark dull red); NaOH, –; Cr, + compl. (dark brown); Cu, – (deep ROS2); Ca, –. — Dyeing: CD.	**1034**
Brown-black powder; e. s. aq. (dull OR, YO and OYT1); sl. s. alc. (OY); s. conc. H_2SO_4 (RV). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; NaOH, –, (deep R→); Cr, + compl.; Cu, + compl.; Ca, + compl.	**1035**
ORS1 powder; sl. s. aq. (pale YO filtrate); s. alc. (YO); s. conc. H_2SO_4 (BV Bkn (D)). — Wool YOT1 in after-chrome test. — Ppt. tests: all – or ±, — Dyeing: CD.	**1036**
COLORS ON WOOL.	
R Bkn (D) powder; s. aq. (turbid OR dull and OY→); s. alc. (Y and OY); s. conc. H_2SO_4 (VR). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; NaOH, – (R); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: CD with formic aldehyde after-treatment.	**1037**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1038	H_2SO_4...(f) VR; (cl) alm. blk. NaOH...RO–O, S1.	(1) OYT2 dis. (2 min.). (2) Cotton, O Bkn (M). (3) Wool, YOS1.	**TRISULPHON BROWN GG [S].** Trisazo dyestuff: salicylic ac. + a *paradiamine* + aminonaphtholsulphonic ac. R + m-diamine. (1897).
1039	H_2SO_4...(f) VR→; (cl) blk. NaOH...RO.	(1) OY–YO, T1+ dis. (2 min., yel. sol.). (2) Cotton, YO–OY sl. dull. (3) Wool, YO bril.	(1) **DIRECT ORANGE G [I].** (2) **TOLUYLENE ORANGE G Conc. [SS].**
1040	H_2SO_4...(f) VR→; (cl) alm. blk. NaOH...RO.	(1) ←OYT1 dis. (2 min.). (2) Cotton, YO dull. (3) Wool, YO bril.	**PLUTO ORANGE G [By].** Azo dyestuff. — (Intro. 1899).
1041	H_2SO_4...(f) VR→; (cl) alm. blk. NaOH...RO–O.	(1) YO dis. (2 min.). (2) Cotton, YOT2. (3) Wool, YO.	**TOLUYLENE ORANGE G [A].** Disazo dyestuff: o-kresotinic ac. (N_2 = 5) + *o-tolidine* + 1-methyl-2,4-diaminosulphonic ac.(5), (N_2 = 3). — (1888).
1042	H_2SO_4...RT1+. NaOH...ORS1.	(1) YOT2 dis. (2 min.). (2) Cotton, YO. (3) Wool, YO.	**JANUS YELLOW R [M].** A basic disazo dyestuff. (Intro. 1897).
1043	H_2SO_4...ROS2. NaOH...←YO.	(1) YO→ dis. (sol. pale yel.). (2) Cotton, ←YOT1 dull. (3) Wool, ←YO.	**TOLUYLENE ORANGE R Conc. [SS].**
1044	H_2SO_4...OS1. NaOH...(f) R Bkn (D).	(1) $\frac{4}{5}$ dis. (2 min.). (2) Cotton, YOT2→. (3) Wool (*direct dyeing*), YOS1.	**NITROSAMINE RED [B].** p-Nitrophenylnitrosamine sodium. (1893).
1045	H_2SO_4...YO. NaOH...←YO.	(1) Abt. $\frac{2}{3}$ dis. (2) Cotton, YT1. (3) Wool, YO bril.	**DIANIL YELLOW R [M].** **CHLOROPHENINE ORANGE RO [ClCo].**
1046	H_2SO_4...YOT1→ dull. NaOH...Y.	(1) Abt. $\frac{2}{3}$ dis. (2 min.); pers. ret. ROT1. (2) Cotton, YOT1→ dull. (3) Wool, YO.	**ACRIDINE ORANGE NO [L].** Tetramethyldiaminoacridine zinc double chloride. — (1889).
1047	H_2SO_4...(f) YOS2; (cl) alm. blk. NaOH...black.	(1) R or O Bkn (v.L) dis. (2 m n.). (2) Cotton, warm gray (M–L). (3) Wool, YO Bkn (M).	(1) **LOGWOOD CRYSTALS 80% [AD].** (2) **LOGWOOD CRYSTALS 65% [AD].** (3) **LOGWOOD CRYSTALS 25% [AD].** (4) **LOGWOOD CRYSTALS 15–20% [AD].**
1048	H_2SO_4...←OYS1. NaOH...YO→.	(1) OYT2 dis. (2) Cotton, YO sl. dull. (3) Wool, YO.	**PYRAMINE ORANGE Y [B].**
1049	H_2SO_4...←OYS1. NaOH...YO→.	(1) OYT1→ –dis. (2) Cotton, OYT1. (3) Wool, YO.	**COTTON ORANGE G [B].** Monazo dyestuff: *Primuline* + 1,3-diaminobenzenedisulphonic ac.(4,5), (N_2 = 6). — (1893).
1050	H_2SO_4...OYS1–. NaOH...OY–Y.	(1) $\frac{1}{2}$ dis. (2) Cotton, YOS1+. (3) Wool, YO→.	**PARA PHOSPHINE G [C].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dark reddish-brown powder; e. s. aq. (OS2, YOS1 and OYT2 dull); sl. s. alc. (dull OYT1); s. conc. H_2SO_4 (V→). — Wool alm. unchanged (→) in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; NaOH, ± (ORS2); Cr, + compl.; Cu, +; Ca, –. — Dyeing: CD.	**1038**
(1) O–YO, S1, (2) ROS2 powders; s. aq. (O and YT1); s. alc. (OY and Y); s. conc. H_2SO_4 (VR→). — Wool YOS1 in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; NaOH, (1) + compl., (2) ± (v. slow); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: CD.	**1039**
O Bkn (D) powder; s. aq. (O and Y); s. alc. (Y and OY); s. conc. H_2SO_4 (VR–R). — Wool YOS1+ in after-chrome test. — Ppt. tests: H_2SO_4, Cr and Cu, all + compl.; Ca, ±; NaOH, –. — Dyeing: CD.	**1040**
O Bkn (D) lustrous powder; sl. s. aq. (OY and YT1); s. alc. (OY); s. conc. H_2SO_4 (VR→). — Wool YOS2+ in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (YOT1); NaOH, – (YO→); Cr, +; Cu, ±; Ca, –. — Dyeing: CD. — Allied brands: Toluylene Orange G [O] [By]; also occurs as Kanthosine J.	**1041**
ROS1 powder; s. aq. (turbid O and YO filtrate); s. alc. (OY); s. conc. H_2SO_4 (bril. RT1). — Wool OY sl. dull in after-chrome test. — Ppt. tests: H_2SO_4, ±; Cr, ±; Cu, –; Ca, –; NaOH, + (dark OR). — Dyeing: SA, CDv.	**1042**
ORS2 powder; s. aq. (RO and OY); sl. s. alc. (OY); s. conc. H_2SO_4 (ORS1). — Wool YOS1 in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (OR–R); NaOH, –; Cr, + compl. (YO); Cu, + compl. (OR); Ca, –. — Dyeing: CD.	**1043**
Yellowish-brown paste; aq. filtrate OY–YO; s. alc. (YOS1); s. conc. H_2SO_4 (YOS1). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, – (YT1); NaOH, –; Ca, –. — Dyeing: This compound is usually not employed for direct dyeing, but is developed with β-naphthol to a red on cotton. For reactions of the developed red on cotton see No. 1025.	**1044**
Dull O–YO powder; s. aq. (turbid YO and Y); s. alc. (Y); s. conc. H_2SO_4 (OY). Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, ±; NaOH, – (O); Cr, + compl.; Cu, –; Ca, –. — Dyeing: CD.	**1045**
See No. 146 for description.	
←YOS2 powder; e. s. aq. (O→ and OY) w. sl. greenish fluor.; s. alc. (OY–Y) w. strong green fluor.; sl. s. conc. H_2SO_4 (←GY) w. green fluor. — Wool O–YO Bkn (M) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, –; Cr, –; Cu, –; Ca, –; NaOH, + (Y). — Dyeing: CT. — Allied brand: Acridine NO [SB]. ["Mixtures of Acridine Orange and Pyronine are said to come into trade as Acridine Scarlet R, 2R, 3R.".]	**1046**
Brown-black lustrous fragments; sl. s. c. aq.; s. h. aq. (OR, OY and YT2); s. alc. (←Y); s. conc. H_2SO_4 (OY and YOS1). — Wool black in after-chrome test. — Ppt. tests: tannin, –; H_2SO_4, (1 and 2) ±, (3,4) –; Cr, ± (dark YS2); Cu, + compl. (RV Bkn (D)); Ca, –; NaOH, – (blue-black sol.).	**1047**
ORS1 powder; s. aq. (turbid O and OYT2); sl. s. alc. (OYT1); s. conc. H_2SO_4 (OY). — Aft-chr. test: unchanged. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, +. — Dyeing: CD.	**1048**
ROS2 powder; e. s. aq. (O and OY–Y, T2); s. alc. (OY); s. conc. H_2SO_4 (OY). — Aft-chr. test: unchanged. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr, + compl. — Dyeing: CD.	**1049**
OS2 powder; e. s. aq. (OY and Y→) w. green fluor.; s. alc. (Y and OY) w. green fluor.; s. conc. H_2SO_4 (←GY) w. green fluor.; — Wool OYS1, + in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, ± (v. slow); Cr, –; Cu, –; Ca, –; NaOH, + compl. — Dyeing: CT.	**1050**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1051	H_2SO_4...dull OYT2. NaOH...YT1→.	(1) No discharge. (2) Cotton, YOT1. (3) Wool, YOT1.	(1) **RHODULINE ORANGE N [By].** (2) **RHODULINE ORANGE NO [By].**
1052	H_2SO_4...Y Bkn (M). NaOH...OY–Y.	(1) Alm. no dis. (2 min.). (2) Cotton, YO Bkn (M). (3) Wool, YO–YOS1→.	(1) **RHEONINE [B].** (2) **RHEONINE R [PK].** (1) Tetramethyltriaminophenylacridine hydrochloride. — (1894).
1052-1	H_2SO_4...←YT1. NaOH...OY–Y, T1.	(1) Abt. ½ dis. (2 min.). (2) Cotton, (1) YO–OYT1; (2) ←OYT1. (3) Wool, (1) ←YO; (2) YO.	(1) **DIAMOND PHOSPHINE R [C].** (2) **FLAVOPHOSPHINE G Conc. New [M].**
1052-2	H_2SO_4...Y w. green fluor. NaOH...Y.	(1) Abt. ⅔ dis. (2 min.). (2) Cotton, YO–O, T1 sl. dull. (3) Wool, YO–O v. bril.	**ACRIDINE ORANGE R [L].**
1052-3	H_2SO_4...YT1→ sl. dull. NaOH...Y.	(1) Abt. ½ or ⅓ dis. (2 min.). (2) Cotton, YOT2. (3) Wool, YO.	(1) **PHOSPHINE [B].** (2) **PHOSPHINE P [M].** Mixture of salts of uns. diaminophenylacridine (chrysaniline) and its homologues. — (1862).
1053	H_2SO_4...GYT1 dull. NaOH...(1) Y Bkn (M); (2,3) Y–GY, T1.	(1) YO, T1–T2 dis. (2 min.); pers. alm. compl. ret. (2) Cotton, YO Bkn (L). (3) Wool, (1,2,3) YOS1, (4) YO Bkn (M).	(1) **PHILADELPHIA YELLOW G [A].** (2) **PHILADELPHIA YELLOW 2G [A].** (3) **PHILADELPHIA YELLOW 3R [A].** (4) **LEATHER BROWN EXT. [B].** Composition as for No. 1052.
1054	H_2SO_4...BGS1. NaOH...YO–OY, T1.	(1) No dis. (2 min.). (2) Cotton, OT2+. (3) Wool, YO–YOT1.	**ANNATTO [AD].** Pulp from fruit of *Bixa Orellana* containing the coloring matter Bixin, $C_{28}H_{34}O_5$.
1055	H_2SO_4...(f) GBS1. NaOH...←YO.	(1) O–YO, T1 dis. (2 min.). (2) Cotton, OT2. (3) Wool, ←YO, bril.	**CONGO ORANGE G [A].** Disazo dyestuff: 2-naphthylamine-3, 6-disulphonic ac.($N_2=1$) + *benzidine* + phenetol ($N_2=4$). — (1889).
1056	H_2SO_4...(f) BVS1. NaOH...O–OS1.	(1) YOT1 dis. (2 min.). (2) Cotton, ←YOT1 dull. (3) Wool, ←YO.	**BENZO CHROME BROWN 5G [By].** Azo dyestuff. — (Intro. 1898).
1057	H_2SO_4...(f) RV; (cl) blk. NaOH...OR.	(1) YOT1 dis. (2 min.). (2) Cotton, YOT1. (3) Wool, YOS1.	**FORMIC RED G [G].**
			SECTION OF ORANGE-YELLOW
1058	H_2SO_4...VR–R. NaOH...ORS1+.	(1) ←Y dis. (2 min.). (2) Cotton, OY. (3) Wool, ←OY.	**JANUS YELLOW G [M].** Basic disazo dyestuff. — (Intro. 1897).
1059	H_2SO_4...(f) VRS1. NaOH...OR→.	(1) YT1–2 dis. (2) Cotton, YT1. (3) Wool, OY–Y bril.	**CREOSOTINE YELLOW G [O].** Disazo dyestuff: *benzidine* + 2 mol. 1-methyl-2-hydroxy-3-carbonic ac. ($N_2=3$). — (1888).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YO Bkn (M) powder; s. aq. (←YO and OYT1); s. alc. (OY–Y); s. conc. H_2SO_4 (GYT1) w. green fluor. — Wool YO→ Bkn (L) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, −; NaOH, ± (Y); Cr, −; Cu, −; Ca, −. — Dyeing: CT.	**1051**
Dark brown lustrous powder; e. s. aq. (dull YO and Y); s. alc. (Y), s. conc. H_2SO_4 (YS1), w. green fluor. — Wool YO Bkn (M) in after-chrome test. — Ppt. tests: tannin and NaOH, +; H_2SO_4, Cr, Cu and Ca, all −. — Dyeing: CT, and leather.	**1052**
OR Bkn (D) and ORS2 powders; e. s. aq. (O–YO and Y); s. alc. (YO and OY); s. conc. H_2SO_4 (GY), w. green fluor. — Wool YO Bkn (M) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, −; Cr, −; Cu, −; Ca, −; NaOH, + (OY). — Dyeing: CT.	**1052-1**
YO–O powder; s. aq. (YO, OY and OYT2); e. s. alc. (YO and OY); s. conc. H_2SO_4 (YG) w. green fluor. — Wool alm. unchanged in after-chrome test. — Ppt. tests: H_2SO_4, −; Cr, −; Cu, −; Ca, −; NaOH, + compl. ["Acridine Orange R extra (L) is a salt of tetramethyldiaminophenylacridine." — Disc. 1889.] — Dyeing: CT.	**1052-2**
(1) OS1, (2) ROS1 powders; s. aq. (YO and Y) w. v. sl. green. fluor.; s. alc. (OY and YO); s. conc. H_2SO_4 (1) (←GY), (2) (OYS1), w. green fluor. — Wool YO Bkn (M) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, −; Cr, −; Cu, −; Ca, −; NaOH, + compl. (Y). — Dyeing: Leather and CT. — Allied brands: Phosphine [C] [SB] [O] [H] [K] [etc.]; Leather Yellow [M] [D] [L] [DH] [O]; Xanthine [O] [P] [DH] [L]; Leather Brown [M]; Patent Phosphine [I]. See also No. 1062.	**1052-3**
Dark brown powders; s. aq. (O–YO, S1, OY and YT2) w. sl. green fluor.; s. alc. (YO and OY); s. conc. H_2SO_4 (GY) w. green fluor. — Wool YO Bkn (D) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, −; Cr, −; Cu, −; Ca, −; NaOH, + compl. (YG). — Dyeing: CD, CT.	**1053**
Dark red-orange paste; alm. i. aq.; sl. s. alc. (OY); sl. s. conc. H_2SO_4 B Bkn (M). — Wool YO Bkn (L) in after-chrome test. — Spectrum: Cf. Formanek's Qualitative Spektralanalyse, p. 262. — Dyeing: CD or CSn. — Used chiefly for coloring butter and cheese. — Allied brands: Orleana, Annotta, Terre de la Nouvelle-Orléans [Fr]; Orellana, Orlean [Ger].	**1054**
ORS1+ powder; e. s. aq. (O, YO and OYT2); s. alc. (YO); s. conc. H_2SO_4 (VB). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (dark brown); Cr, + compl.; Cu, −; Ca, −; NaOH, −. — Dyeing: CD.	**1055**
Dark brown powder; s. aq. (sl. turbid OS2, YO and OYT2); s. alc. (OYS1 and OYT1); s. conc. H_2SO_4 (BV). — Wool ←OYS1 in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; Cr, + compl.; Cu, +; Ca, −; NaOH, − (clear OR). — Dyeing: CD, w. Cu and Cr aftertreatment.	**1056**
R Bkn (D) powder; s. aq. (turbid O and OY dull); s. alc. (OY and YT2); s. conc. H_2SO_4 (V). — Wool unchanged in after-chrome test. — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all + compl.	**1057**
COLORS ON WOOL.	
OS2 powder; s. aq. (O and Y); s. alc. (Y and OY); s. conc. H_2SO_4 (VR–R). — Wool←Y dull in after-chrome test. — Ppt. tests: H_2SO_4, −; Cr, −; Cu, −; Ca, −; NaOH, + compl. (RO). — Cotton and wool unchanged in Test 20 *after washing*. — Dyeing: SA, CDv, CT. — [Similar in composition to "Janus Yellow R (M)," introduced in 1897].	**1058**
OYS1 powder; sl. s. aq. (pale turbid Y); s. alc. (Y); s. conc. H_2SO_4 (VR→). — Ppt. tests: H_2SO_4, ±; NaOH, − (pale O) Cr, ±; Cu, −; Ca, ±; all ppts. form slowly. — Dyeing: CD. — Allied brands: Creosotine yellow G [A] [By].	**1059**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1060	H_2SO_4...(f) VRS1. NaOH...(1) RO→; (2,3,4) OR→.	(1) OY–Y, T2+ dis. (2 min.). (2) Cotton, ←YT1 sl. dull. (3) Wool, OY.	(1) **CHRYSAMINE R** [By]. (2) " R Conc. [SS]. (3) " [P]. Disazo dyestuff: *o-tolidine* + 2 mol. salicylic ac.(CO_2H : OH : N_2 = 1 : 2 : 5). — (1884).
1061	H_2SO_4...(f) VRS1; (cl) alm. blk. NaOH...RO.	(1) OY–Y, T2 + dis. (2 min.). (2) Cotton, YT2. (3) Wool, OY–Y.	(1) **CHRYSAMINE G** [By]. (2) " G [A]. Disazo dyestuff: *Benzidine* + 2 mol. salicylic ac. (CO_2H : OH : N_2 = 1 : 2 : 5). — (1884).
1062	H_2SO_4...(f) VRS2; (cl) blk. NaOH...←O.	(1) YT2– dis. (2 min.); pers. ret. YT2. (2) Cotton, OY–Y, T2. (3) Wool, OY bril.	(1) **CHROME FAST YELLOW G** [I]. (2) **META CHROME YELLOW 2R EXT.** [A].
1063	H_2SO_4...(f) VR. NaOH...YO→.	(1) OYT1 dis.; pers. OYT1 dull. (2) Cotton, YT1–2. (3) Wool, OY–YO.	**CHRYSOPHENINE EXT.** [B].
1064	H_2SO_4...(f) VR→. NaOH...OY.	(1) Y–OY, T2 dis. (2) Cotton, YT1–2. (3) Wool, OY bril.	**DIAMINE FAST YELLOW M** [C]. **CHLORAMINE YELLOW M** [By].
1065	H_2SO_4...VR dull; (at first, GYS1 and RV Bkn (D)). NaOH...Y.	(1) YT2+ dis. (yel. sol.). (2) Cotton, OYT2. (3) Wool, OY–Y bril.	**SAFFRON** [Italian]. Dried stigmas of *Crocus sativus*, containing the coloring matter crocin or saffronine.
1066	H_2SO_4...OR; (4,13) R. NaOH...OY.	(1) OY–Y, T1 or T2 dis. (2 min.); *pers. ret. alm. compl.* (2) Cotton, Y or YT1. (3) Wool, OY.	(1) **DIAMINE FAST YELLOW FF** [C]. (2) **DIAMINE FAST YELLOW B** [C]. (3) **CHLOROPHENENE Y** [ClCo]. (4) **CHLORAMINE YELLOW G** [SS]. (5) **CHLORAMINE YELLOW YY** pat. [By]. (6) **CHLORAMINE YELLOW C** pat. [By]. (7) **CHLORAMINE YELLOW RC** [By]. (8) **CHLORAZOL FAST YELLOW A** [H]. (9) **CHLORAZOL FAST YELLOW B** [H]. (10) **NAPHTHAMINE YELLOW NN** Conc. [K]. (11) **CHLORANTINE YELLOW G** [I]. (12) **OXYDIANIL YELLOW OO** [M]. (13) **SULPHON YELLOW GG** [SS]. (14) **DIPHENYL FAST YELLOW G** [G]. (15) **CHLORAMINE YELLOW G** Conc. [SS]. Oxidation products of dehydrothiotoluidinesulphonic acid, or of the latter and primuline. — (1887, '90).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YOS2 or S3 powders; s. or d. s. aq. ((1,2) OY and Y, (3) YT1, (4) Y); s. alc. (Y); s. conc. H_2SO_4 (VR→). Wool color sl. deepened in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; NaOH, + compl. (O); Cu, Cr and Ca, all + for (1,2,3); all ± for (4). — Dyeing: CD. — Allied brands: (1) Chrysamine R [A] [L] [Lev].	**1060**
Description as for No. 1060 above.	**1061**
OYS2→ powder; s. aq. (YO and Y, sl. turbid); s. alc. (Y and OY); s. conc. H_2SO_4 (R Bkn (M)→). Wool OYS1 in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; NaOH, + (O); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WCh.	**1062**
YO–O powder; s. aq. (OY and Y); s. alc. (Y and OY); s. conc. H_2SO_4 (VR). — Ppt. tests: H_2SO_4, Cr and NaOH, all + compl.; Cu and Ca, +. — Aft-chr. test: unchanged. — Dyeing: CD. — [Chyrosphenine (L) (A) (By), disc. 1886, is sodium disulphostilbenedisazophenetolphenol].	**1063**
YO powder; e. s. aq. (OY, Y and YT2); sl. s. alc. (OYT1); s. conc. H_2SO_4 (VR). — Aft-chr. test: unchanged. — Ppt. tests: H_2SO_4 and Cr, +; NaOH, Cu and Ca, all –. — Dyeing: CD.	**1064**
See No. 153 for description.	
Saffron yields an OS1–O powder having a characteristic taste, and an odor somewhat like that of iodoform. Aq. filtrate, OY; alc. filtrate, Y. Conc. H_2SO_4 turns blue. — Ppt. tests: H_2SO_4, – (OY); NaOH, – (Y). — Genuine saffron, grown in Southern Europe and Asia, is sometimes used as a drug and as a food color, and owing to its high cost is often grossly adulterated. For its bibliography and histology see Winton, p. 623; for its spectroscopic reactions, Formanek's " Die qualitative Spektralanalyse," p. 265.	**1065**
Dull brownish-yellow powders; e. s. aq. (YO and Y); sl. s. alc. (YT→); s. conc. H_2SO_4 (ORT1 or ROT1). — Wool unchanged or slightly less orange in after-chrome test. — Ppt. tests: H_2SO_4, + or ±; NaOH, Cu and Ca, all – or ±; Cr, + compl. — Dyeing: CD. — Allied brand: Columbia Yellow [A].	**1066**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1067	H_2SO_4...RO. NaOH...RO.	(1) YT2 dis. (2) Cotton, YT2+. (3) Wool, OY→.	**ORIOL YELLOW [G].** Monazo dyestuff: *primuline* + salicylic ac.(N_2 : OH = 1 : 4). —(1888). **TURMERIC ROOT [AD].** **CURCUPHENINE [ClCo].**
1068	H_2SO_4...YO→. NaOH...YO.	(1) YT1 dis. (2 min., sol. pale yel.). (2) Cotton, Y. (3) Wool, OY.	**THIAZOL YELLOW GL [By].** A dehydrothiotoluidinedisulphonic acid derivative (?).
1069	H_2SO_4...YOS2. NaOH...YOS2.	(1) OYS1 dis. (2 min., sol. yel.). (2) Cotton, YT2 dull. (3) Wool, OYS1.	**EXTRACT FUSTIC B EXT. [AD].** **SUDAN G [A].**
1070	H_2SO_4....←YO. NaOH...YO.	(1) OYT2 dis. (2 min.). (2) Cotton, OYT1 + →. (3) Wool, OYT1 + →.	**NEW PHOSPHINE G [C].** Azo dyestuff: *p-aminobenzyldimethylamine* + resorcine, (N_2 : OH : OH = 1 : 2 : 4). — (1892).
1071	H_2SO_4...OYT1 − →. NaOH...OY-Y −.	(1) YT2 dis.; pers. compl. ret. (2) Cotton, OYT1. (3) Wool, ←OY.	(1) **DIAMOND PHOSPHINE GG [C].** (2) **DIAMOND PHOSPHINE PG [C].** (3) **PARA PHOSPHINE GG [C].** (4) **FLAVO PHOSPHINE 2G Conc. new [M].** (5) **RHEONINE GX [B].**
1072	As above.	(1) YT1 dis.; pers. ret. compl. (2) Cotton, ←OYT1. (3) Wool, ←OY.	**AUROFLAVINE KR [M].**
1073	H_2SO_4...YO Bkn (L). NaOH...OYT1.	(1) YT2 dis.; air ret., OYT1-2. (2) Cotton, YOT2+ →. (3) Wool, ←OY-OYT1.	**PHOSPHINE EXT. [B]**
1074	H_2SO_4...OYT1 − →. NaOH...YT1.	(1) Less than ½ dis. (2 min.). (2) Cotton, OY −. (3) Wool, OY→.	(1) **FLAVOPHOSPHINE 4G Conc. new [M].** (2) **AUROPHOSPHINE 4G [A].** (3) **ACRIDINE YELLOW [L].** (4) **DIAMOND PHOSPHINE GG [C].**
1075	H_2SO_4...OYT1→. NaOH...YT2.	(1) Alm. no dis. (yel. sol.). (2) Cotton, OYT1. (3) Wool, OY.	(1) **EUCHRYSINE R [B].** (2) **RHEONINE GD [B].**
1076	H_2SO_4...YT2 dull. NaOH...YT1 −.	(1) YOT1 dis. (2) Cotton, YOT1 dull. (3) Wool, OY-YO, T1.	**RHEONINE Y [B].**

SECTION OF YELLOW

1077	H_2SO_4...VR Bkn (D). NaOH...←Y.	(1) Alm. no dis. (yel. sol.). (2) Cotton, Y-YT1. (3) Wool, ←Y bril.	**THIOFLAVINE S [C].** Thiobenzenyl dyestuff: sodium salt of methylated primuline. — (1888). **COLUMBIA YELLOW [A].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
YOS2 powder; e. s. aq. (YO and Y); s. alc. (Y); s. conc. H_2SO_4 (O). — Ppt. tests: H_2SO_4, Cr and Cu (YOS1), all + compl.; NaOH, ± (RO→); Ca, —. — Dyeing: CD. — Allied brands: Cotton Yellow R [B]; Alkali Yellow [D].	**1067**
See No. 535 for description.	
See No. 163 for description.	
Y Bkn (M) powder; e. s. aq. (OY and ←GY); s. alc. (GY); s. conc. H_2SO_4 (OY). — Wool YS1 in after-chrome test. — Ppt. tests: H_2SO_4, + compl. (ORS1); NaOH, — (←YO); Cr, + compl. (OS2); Cu, — (ORS2); Ca, —. — Dyeing: SA, CT.	**1068**
Dark brown paste; s. aq. (YO and Y); sl. s. alc. (←Y); sl. s. conc. H_2SO_4 (OY) w. sl. green. fluor. — Wool YOS3→ in after-chrome test. — Ppt. tests: H_2SO_4, + compl.; tannin, —; Cr and Cu, +; Ca, —; NaOH, — (OS3).	**1069**
See No. 536 for description.	
YOS2 powder; s. aq. (OY and Y→); s. alc. (Y and OY); s. conc. H_2SO_4 (OY and YO). — Ppt. tests: tannin, +; H_2SO_4, NaOH (O), Cr, Cu and Ca, all —. — Dyeing: CT.	**1070**
(1,2,4) OS2, (3) YOS2 powders; e. s. aq. (YO and Y→) w. green. fluor.; s. alc. (Y and OY) w. (1,2,4) strong, or (3) sl. green. fluor.; s. conc. H_2SO_4 (GY) w. green. fluor. — Wool (1,2,4) OY Bkn (M), (3) OYS1 in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, — NaOH, + compl. (Y or OY); Cr, —; Cu, —; Ca, —. — Dyeing: CT.	**1071**
Description as for No. 1082 except YO powder whose aq. and alc. sol. are non-fluorescent; and ppt. w. NaOH ± (YO).	**1072**
Description as for No. 1071 except ppt. test for NaOH, + (GY); and aq. and alc. sol. non-fluorescent.	**1073**
(1,4) O Bkn (D), (2) OS2, (3) O–YO Bkn (M) powders; e. s. aq. ((1,4) OY, (2,3) YO and GYT1) w. green. fluor.; s. alc. (OY or Y→ and GYT1) w. strong green. fluor.; s. conc. H_2SO_4 (GYT) w. green. fluor. — Wool Y Bkn (M) in after-chrome test. — Ppt. tests: tannin, +; H_2SO_4, —; NaOH, (1,4), ±, (2,3) + compl. (Y); Cr, Cu and Ca, all —. — Dyeing: CT, SA.	**1074**
Sl. lustrous O–YO, S1 powder; e. s. aq. (YO and Y) w. green. fluor.; s. alc. (Y and OY) w. green. fluor.; s. conc. H_2SO_4 (GY) w. green. fluor. — After-chrome test: OY Bkn (M). — Ppt. tests: tannin, +; H_2SO_4, —; NaOH, + compl. (Y); Cr, Cu and Ca, all —. — Spectrum: (1) *17.31*, 15.00, both approx., (alc.). — Dyeing: Leather.	**1075**
YO Bkn (D) powder; e. s. aq. (YO, Y and YT2) w. green fluor.; s. alc. (O) w. green fluor.; s. conc. H_2SO_4 (Y) w. green fluor. — Aft.-chr. test: Y Bkn (L). — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all —; NaOH, + compl. — Dyeing: CT.	**1076**
COLORS ON WOOL.	
OYS2 powder; e. s. aq. (OY and Y) w. sl. bluish fluor. in v. dil. sol.; s. alc. (GYT1 and Y) w. green. fluor.; s. conc. H_2SO_4 (VR Bkn (M)) w. bluish fluor. — After-chrome test: Y→ sl. dull. — Ppt. tests: H_2SO_4, + compl. (YO); NaOH, ± turbid; Cr, + compl.; Cu and Ca, —. — Dyeing: CD.	**1077**
See No. 167 for description.	

No.	**COORDINATION TESTS.** (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1078	H_2SO_4...←OR. NaOH...O.	(1) ½ dis.; (pers. compl. dis.). (2) Cotton, YT1. (3) Wool, Y bril.	**ALKALI YELLOW R [D].** Azo-thiobenzyl dyestuff: salicylic acid + *benzidine* + dehydrothiotoluidine sulphonic acid. — (1889).
1079	H_2SO_4...YOT1. NaOH...OYT1.	(1) YT3. (2) Cotton, YT1. (3) Wool, Y, T1–2.	**BENZO FAST YELLOW 5GL [By].**
1080	H_2SO_4...YO Bkn (M). NaOH...Y–OY.	(1) No dis. (2) Cotton, YT1. (3) Wool, YT1.	**DIPHENYL FAST YELLOW GG [Kell].**
1081	H_2SO_4...OYS1. NaOH...(1,2,3,4) ←O, (5) ←YO.	(1) (1,2,3,4) Alm. no dis. in 2 min.; (5) YT1 dis. (2) Cotton, YT1. (3) Wool, (1) YT1+; (2) ←Y; (3,4) Y; (5) ←YT1.	(1) **THIAZOL YELLOW G [By].** (2) " " **R [By].** (3) **CLAYTON YELLOW [ClCo].** (4) **MIMOSA M [M].** (5) **MIMOSA YELLOW** pat. [G]. (1,3) Sodium salt of diazoamino comp. of dehydrothiotoluidinesulphonic acid, or mixed diazoamino comp. of this ac. and primuline. — ((1) 1887; (2) '99).
1082	H_2SO_4...OYS1. NaOH...RO→.	(1) Alm. no dis. (2) Cotton, YT2. (3) Wool, ←Y.	**OXYDIAMINE YELLOW GG [C].**
1083	H_2SO_4...OY dull. NaOH...OS2+(*1 min.*).	(1) OY–OYT1 dis. (Y sol.). (2) Cotton, GYT2. (3) Wool, Y dull.	**RESOFLAVINE [B].** Oxidation product of aromatic hydroxycarbonic acids (like m-dioxybenzoic ac.) — (1895).
1084	H_2SO_4...OYT2→. NaOH...YT2.	(1) YT2 dis. (2) Cotton, (1,2) ←YT1; (3) YT1→. (3) Wool, (1,2) ←YT1; (3) YT1.	(1) **FAST COTTON YELLOW T [K].** (2) **THIOFLAVINE T [C].** (3) **RHODULINE YELLOW 6G [By].** (2) Trimethylchloride of dehydrothiotoluidine. — (1888).
1085	H_2SO_4...OYT3. NaOH...YT3.	(1) ½ dis., 2 min. (yel. sol.). (2) Cotton, YT1→. (3) Wool, (1,2) Y→ bril.; (3) YT1.	(1) **AURAMINE O [B].** (2) " **II [By].** (3) " **O [G].** (4) " **G [B].** (1,2,3) Aminotetramethyldiaminodiphenlymethane hydrochloride. (1883, '87, '89). — (4) Aminodimethyldiamino-di-o-tolylmethane hydrochloride.
1086	H_2SO_4...OYT. NaOH...YT1→.	(1) No dis. (2) Cotton, YT1+. (3) Wool, ←Y bril.	**EUCHRYSINE GG [B].**
1087	H_2SO_4...(1) OYT1; (2) Y. NaOH...Y or YT1.	(1) Alm. no dis. in 2 min. (2) Cotton, YT1 or YT1—→. (3) Wool, Y bril.	(1) **PRIMULINE [B].** (2) " **A [B].** (1) Sodium salt of monosulphonated dehydrothionated condensation products of dehydrotoluidine mixed w. some sodium dehydrothiotoluidine sulphonate. — (1887).
1088	H_2SO_4...OYT1. NaOH...Y.	As above.	(1) **CHROMINE G [K].** (2) **THIAZOL YELLOW 3G [By].** (1) Sodium salt of a methylated primuline. — (1888).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
O Bkn (D) powder; s. aq. (turbid Y filtrate); s. alc. (Y and GYT1); s. conc. H_2SO_4 (←RO); — After-chrome test: OYS1 + →. — Ppt. tests: H_2SO_4, + compl. (←YO); NaOH, – ; Cr, + compl.; Cu, – ; Ca, – ; — Dyeing: CD.	**1078**
OYS1→ powder; sl. s. aq. (turbid Y and ←GYT1 filtrate); s. alc. (GYT1 and Y); s. conc. H_2SO_4 (O). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl. (D. brownish green); NaOH, + compl. (YO); Cr, + compl.; Cu, + compl.; Ca, + compl.;— Dyeing: CD.	**1079**
OS2 dull, powder; e. s. aq. (YO and GY); sl. s. alc. (GYT2) w. v. sl. green. fluor.; s. conc. H_2SO_4 (ORT1) w. bluish fluor. — After-chrome test: Y – YS1. — Ppt. tests: H_2SO_4, + (O); NaOH, – (O); Cr, + compl.; Cu, – ; Ca, –. — Dyeing: CD. — ["Diphenyl Fast Yellow (G)", disc. 1897, is sodium salt of nitrosostilbenedisulphonic acid-azoxyprimuline.]	**1080**
(1) OYS2, (3) YOS3, (2,4,5) YOS1 +, powder; e. s. aq. (←OY and Y→ sl. turbid); s. alc. (Y→); s. conc. H_2SO_4 (OY). — After-chrome test: (1,2,3,4) YT2 (5) Y dull. — Ppt. tests: H_2SO_4 + compl. (1,3,5) (←YO), (3,4) (O); NaOH, –, (1,3) (O), (2,4) (←RO), (5) (RO); Cr, + compl.; Cu, – ; Ca, – or ±. — Dyeing: CD. Allied brands: Turmerine [BSS]; Mimosa [G].	**1081**
OYS1 powder; e. s. aq. (OY and ←GY); s. alc. (GYT1 and Y); s. conc. H_2SO_4 (Y and OY) v. sl. bluish fluor. — After-chrome test: O Bkn (M). — Ppt. tests: tannin, + (←YO); NaOH, – (RO – O); Cr, Cu, and Ca as for No. 1081 above. Dyeing: CD.	**1082**
Yellow paste; v. turbid greenish yel. aq. filtrate; s. alc. (GY→); s. conc. H_2SO_4 (Y). — After-chrome test: greenish-black. — Dyeing: WCh.	**1083**
YOS2 + powder; e. s. aq. (Y and GYT1); s. alc. (Y and ←GYT1); s. conc. H_2SO_4 (alm. colorless). — After-chrome test: (1) YT2→ dull. — Ppt. tests: H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Dyeing: CT.	**1084**
(1,3) OY, (2) GY powder; e. s. aq. ((1,3) Y, (2) Y→ and (1,2,3) ←GY); s. alc. (←GY and Y); s. conc. H_2SO_4 (alm. colorless). — After-chrome test: YT2 Bkn. — Ppt. tests: H_2SO_4, – ; NaOH, + compl. (slow, white); Cr, Cu and Ca, all –. — Dyeing: CT; paper; leather. Allied brands: Auramine [B] [I] [G] [M] [S]; Pykotanin Aureum (Merck); Auramine, I, II, III.	**1085**
←YO powder; e. s. aq. (←Y and GYT1) w. green. fluor.; s. alc. (←GYT1 and Y) w. sl. green. fluor.; s. conc. H_2SO_4 (GYT1) w. strong green. fluor. — After-chrome test: Y–YS1. — Ppt. tests: tannin, +; H_2SO_4, – (OY); NaOH, + compl. (YT1→); Cr, Cu and Ca, all –. — Dyeing: Leather.	**1086**
OYS2 powder; e. s. aq. (Y and GYT1); s. alc. GYT1 w. green. fluor.; s. conc. H_2SO_4 (dull YT2 or GYT2) w. bluish fluor. — After-chrome test: sl. duller. — Ppt. tests: H_2SO_4, + compl.; NaOH, ± or – ; Cr, + ; Cu, – ; Ca, –. — Test 20 (diazotization and development w. β-naphthol on wool): (1) ←OR; (2) OR. — Dyeing: CD; CDv. (ingrain colors). — (1) Allied brands: Primuline [BSS] [By] [ClCo] [K] [C]; Polychromine [G]; Aureoline [RH]; Aurolin [H]; Carnotin [ClCo]; Sulphine [B]; Thiochromogene [D].	**1087**
(1) OYS2, (2) OYS4 powder. — Description otherwise as for No. 1087 above, except that diazotization and development w. β-naphthol on wool (Test 20) give: (1) YO; (2) O–OS1. — Dyeing: CD.	**1088**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1089	H_2SO_4...GY Bkn (L–M). NaOH...OY Bkn (M).	(1) OY (T1–2) dis. (2) Cotton, OYT1. (3) Wool, Y Bkn (M).	**DIAMOND PHOSPHINE D [C].**
			SECTION OF BLUE-VIOLET
1090	H_2SO_4...R Bkn (M). NaOH...BS2.	(1) ←R Bkn (L) dis. (sol. R); pers. ret. V Bkn. (2) Cotton, RVT2. (3) Wool, BVS1.	**ALIZARINE BLUE pat. [B].**
			SECTION OF VIOLET
1091	H_2SO_4...OR Bkn (D) approx. NaOH...BVS2.	(1) Alm. compl. dis. (sol. OR); pers. ret. pale grayish orange. (2) Cotton, RV Bkn (L). (3) Wool, V.	**ANTHRACENE BLUE WB [B].** Product of action of fuming sulphuric ac. on 1,5-dinitroanthraquinone. (1891).
1092	H_2SO_4...←YOS2. NaOH...BV, S1–S2.	(1) ORT2 – dis. (Or.-red sol.). (2) Cotton, V Bkn (L). (3) Wool, V–VS1.	**ANTHRACENE BLUE WG [B].** Product of action of fuming sulphuric acid on 1,5-dinitroanthraquinone. (1891).
1093	H_2SO_4...ROS2. NaOH...BVS1 or S2.	Same as above.	**ANTHRACENE BLUE WGG EXT. [B].** Sodium diaminodioxyanthraquinonesulphonate. — (1897.)
1094	H_2SO_4...(f) ←VS2; sol. V pale. NaOH...BS2.	(1) OT2+ dis. (O. sol.). (2) Cotton, RVT2. (3) Wool, V sl. dull.	**ALIZARINE CYANINE G [By].** Imide of tri- or tetra- oxyanthradiquinone. — (1890).
			SECTION OF RED-VIOLET
			FORMIC BLUE R [G].
			VIOLAMINE B [M].
			SECTION OF GRAY
1095	H_2SO_4...W.-gray-black. NaOH...W.-gray (D).	(1) No. dis. (2) Cotton, V Bkn (D)→. (3) Wool, W gray (D) (brownish).	**GRIS DIRECT R [P].**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Brown-black powder; e. s. aq. (OS2, YOS1, Y and YT2) w. green. fluor.; s. alc. (OY) w. strong green. fluor.; s. conc. H_2SO_4 (YG→) w. strong green. fluor. — Ppt. tests: tannin, + ; H_2SO_4, – ; NaOH, ± (YOS1); Cr, Cu and Ca, all –. — Dyeing: CT.	**1089**
COLORS ON WOOL.	
Black powder; s. aq. (deep BV→); d. s. alc. (BV–V) w. red fluor.; s. conc. H_2SO_4 ((RV Bkn (M), w. red fluor. — After-chrome test: BGS2. — Ppt. tests: H_2SO_4, + compl. (VRS2); NaOH, – (deep B); Cr, + compl. (RVS2); Cu, + compl. (RVS2); Ca, + compl. (VS2). — Spectrum: 11.91, 12.26, (13.96, 19.77, approx.), 10.17 (broad), (alc.).	**1090**
COLORS ON WOOL.	
Dark brown-black paste; aq. filtrate V; NaOH sol. clear bluish violet; s. alc. (RV–VR) w. red fluor.; s. conc. H_2SO_4 (cool gray (L) and VR Bkn (D)) w. red fluor. — After-chrome test: BG Bkn (D). — Ppt. tests: H_2SO_4, + compl. (VRT1); NaOH, – (VB); Cr, + compl. (RV); Cu, + compl. (dull ←VR); Ca, ±. — Spectrum: *11.88*, 12.58, 14.04, 14.82, (9.32, 16.32, 17.26 v. weak) (alc.) — Dyeing: WCh.	**1091**
Black paste; aq. filtrate BV; s. alc. (V) w. red fluor.; s. conc. H_2SO_4 (OYS2). — After-chrome test: BG Bkn (D). — Ppt. tests: H_2SO_4, + compl.; Cr, Ca and Cu, all –. — Spectrum: *11.86*, (12.51, 13.92, 9.51, approx.) (alc.). — Dyeing: WCh.	**1092**
Same as above except s. conc. H_2SO_4 [←OS2]. — Spectrum: *11.70;* 12.47; (13.82, 14.72 approx.) alc.	**1093**
Black paste, aq. filtrate B→ Bkn (D); s. alc. (RV) w. red fluor.; s. conc. H_2SO_4 V sol. w. red fluor. — After-chrome test: BG Bkn (M). — Ppt. tests: H_2SO_4, – ; NaOH, – (GBS2→); Cr, + compl.; Cu, – (BG Bkn sol.); Ca, –. — Spectrum: 9.85, 11.82, (13.94 v. weak) (alc.). — Dyeing: WCh. (WCh bluish-green; WAl, blue.)	**1094**
COLORS ON WOOL.	
See No. 684 for description.	
See No. 237 for description.	
COLORS ON WOOL.	
Black paste; aq. filtrate VR Bkn (D); NaOH black ppt.; v. sl. s. alc. (OR Bkn (D)); sl. s. conc. H_2SO_4 (warm-gray (D)). After-chrome test: unchanged. — Ppt. tests: tannin, + ; H_2SO_4, – ; NaOH, + compl.; Cr, Cu and Ca, all –. — Dyeing: CD.	**1095**

DYES OF GENUS IV, PYRONINE, OXYKETONE, THIO- AND NATURAL

(WHOSE COLOR ON WOOL IS NOT DISCHARGED BY RONGALITE

DIVISION B.—DYES NOT COLORING COTTON TO A

SUBDIVISION 1. — SOLUBLE IN ONE OR MORE OF THE SOLVENTS —

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET-RED
1096	H_2SO_4...(f) ←VR–VRS1. NaOH...(f) V Bkn (v.D).	(1) OY–Y, T1 dis. (or.-yel. sol.). (2) Cotton, VRT3. (3) Wool, VRS1.	**ALIZARINE BLACK B [By].**
1097	H_2SO_4...(cl) VRS2; (f) V. NaOH...RVS2.	(1) VRT2 dis. (sol. red.). (2) Cotton, alm. white (ORT3 dull). (3) Wool, VR.	**ANTHRACENE BLUE WR [B].** (1,3,4,5,7,8),Hexaoxyanthraquinone (1891).
1098	H_2SO_4...VR. NaOH...RVS1.	(1) ORT1 (abt. $\frac{1}{2}$ dis.). (2) Cotton, white. (3) Wool, VR.	**ACID ALIZARINE BLUE BB [M].** Sodium salt of hexaoxyanthraquinonedisulphonic ac. — (1893).
1099	H_2SO_4...RS1. NaOH...VR–R.	(1) O–YO dis. (yel.-or. sol.); air-ret. ←RT2+, quickly. (2) Cotton, white. (3) Wool, VR–R bril.	**ALIZARINE RUBINOLE R Pat. [By].**
1100	H_2SO_4...R–VR. NaOH...V Bkn (D).	(1) OYT2 dis. (1 min., sol Y). (2) Cotton, white. (3) Wool, VRT1 + →.	**ALIZARINE FUCHSINE RD Paste [By].**
1101	H_2SO_4...ORS1. NaOH...(f) R–VR.	(1) RT2 – dis.; air ret. ←ORT2; pers., alm. compl. ret. (2) Cotton, VRT2 –. (3) Wool, VR–VRS1.	**VIOLAMINE R [M].** Sodium salt of di-o-tolyl-m-aminophenolphthaleinesulphonic ac. (1888).
1102	H_2SO_4...RO dull. NaOH...VR–R dull.	(1) OYT1 dull dis. (2) Cotton, VRT2+ dull, besmeared. (3) Wool, VR–R Bkn (M+).	**ALIZARINE GRENAT R Paste [M].** α-Aminoalizarine. (1877, '92).
1103	H_2SO_4...O–YO. NaOH...VR–R, T1+.	(1) *v. sl.* dis. (VRT2 sol.). (2) Cotton, white. (3) Wool, VR–R, T1+ bril.	**ROSE BENGAL 3B [M].** Potassium salt of tetraiodtetrachlorfluoresceine. — (1882).
1104	H_2SO_4...←OYT1. NaOH...VR.	(1) Abt. $\frac{1}{3}$ dis. (VR sol. w. sl. yel. fluor.). (2) Cotton, white. (3) Wool, VRT1+⟶, v. bril.	**BRILLIANT KITON RED B [Klp].**

BENZENYL, AZO AND INDANTHRENE DERIVATIVES, COLORING MATERIALS.

TO A TONE WEAKER THAN A TINT 2 IN TEST 8.

UNIFORM TONE AS DEEP AS TINT 2 IN TEST 5.

Water, Alcohol, or Dilute Aqueous Sodium Hydroxide.

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Black and white granular powder; e. s. aq. (VR); s. alc. (VR); s. conc. H_2SO_4 (VR–RV). — After-chrome test: blue-black. — Ppt. tests: tannin, –; H_2SO_4, +; NaOH, – (←RV and RVT2→); Cr, + compl.; Cu, + compl.; Ca, +. — Dyeing: WCh.	**1096**
Dark brown paste; d. s. aq. (R Bkn (M)); s. NaOH (bluish violet); s. alc. (violet); s. conc. H_2SO_4 (BV) w. dark red fluor. — After-chrome test: BV Bkn (D). — Ppt. tests: H_2SO_4, +; NaOH, + (BVS2); Cr, Cu and Ca, + compl. — Spectrum: *11.80*, 12.49, 13.97, 14.71, 16.25, 18.09. — Dyeing: WCh.	**1097**
Brown powder; s. h. aq. (red); s. alc.; s. conc. H_2SO_4 (BV–RV) w. dark red fluor. — After-chrome test: BV and gray. — Spectrum: *11.83*, 12.45, 14.62, approx. (aq.) — Dyeing: WGSCh.	**1098**
VRSI powder; e. s. aq. (R–VR) and VRT2→; e. s. alc. (VRT1→); s. conc. H_2SO_4 (VRT1→). — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, +; Cu, –; Ca, ±. — Spectrum: *11.95*, 14.19, ill defined, (aq.). — Dyeing: WCh.	**1099**
Reddish-black paste; e. s. aq. (R bril. and ←RT2); sl. s. alc. (ORT1); s. conc. H_2SO_4 (VR–R). — After-chrome test: uneven BV and gray. — Ppt. tests: H_2SO_4, —; NaOH, — (dark purple; on dilution ←R and VRT2); Cr, +; Cu, +; Ca, –.	**1100**
VRS2 → powd.; e. s. aq. (R and VRT1); e. s. alc. VR→; s. conc. H_2SO_4 (RO–O). — Spectrum: 12.65 (aq.), ill defined. — Allied brand: Fast Acid Violet A2R [M].	**1101**
Chocolate-brown paste; aq. filtrate violet red; s. NaOH (deep red); s. alc. (red); s. conc. H_2SO_4 (←O). — After-chrome test: YO Bkn (v.D). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (R and ←RT2); Cr, + compl.; Cu, + compl.; Ca, – or ±. — Dyeing: WCh. — Allied brand: Alizarine Cardinal (By).	**1102**
Bril. R powder; e. s. aq. (OR and VRT2→); s. alc. (VR–R, T1) w. dull orange fluor.; s. conc. H_2SO_4 (YO→). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl. (RO); NaOH, –; Cr, + compl.; Cu, + compl. (VR→); Ca, –. — Spectrum: *11.75*, 12.92 (aq.). Dyeing: WA, SA. — Allied brands: Rose Bengal 3B [DH]; Rose Bengal [B] [C] [KS].	**1103**
R Bkn (M) powder; e. s. aq. (←R and VRT1) w. brownish green fluor.; s. alc. (R–VR, T2 bril.) w. yel. fluor.; s. conc. H_2SO_4 (Y–OY) w. green fluor. — After-chrome test: VRT1 +. — Ppt. tests: tannin, H_2SO_4, NaOH, Cr, Cu and Ca, all –. — Spectrum: *11.00*, 12.81 (aq.). — Dyeing: WGS.	**1104**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction
1105	H_2SO_4...OYT1. NaOH...VR→.	(1) RT2 dis. (VRT1 sol. w. yel. fluor.). (2) Cotton, white. (3) Wool, VRT1+, v. bril.	**XYLENE RED B [S].**
1106	H_2SO_4...←OYT1. NaOH...VRT1.	(1) RT2 dis. (2) Cotton, white. (3) Wool, VRT1.	**ERYTHROSINE [blue] [G].**
1107	H_2SO_4...←OYT1. NaOH...VRT1.	(1) v. sl. dis. (pale red sol., feeble fluor.). (2) Cotton, white. (3) Wool, VRT1+→, bril.	(1) **PHLOXINE P [B].** (2) **PHLOXINE [B].** Potassium salt of tetrabromdichlorfluoresceine. — (1875).
1108	H_2SO_4...OYT3. NaOH...VR-RV.	(1) OY→ dis. (2) Cotton, alm. white. (3) Wool, VR-RV.	**ANTHRAQUINONE VIOLET R** Powder [B]. (1) **INDANTHRENE MAROON R** [B]. (2) **FUSCANTHRENE B Paste** (Cont.).
			SECTION OF RED
			ALGOLE RED B [By].
			ALIZARINE MAROON Paste [B].
			FAST ACID MAGENTA G [M].
1109	H_2SO_4...O. NaOH...R bril.	(1) Alm. no dis. (ORT1 sol.). (2) Cotton, alm. white. (3) Wool, R. v. bril.	(1) **ROSE BENGAL [B].** (2) " " **EXT. [B].** (3) " " **G [M].** Alkali salt of tetraiododichlorfluoresceine. — (1875).
1110	H_2SO_4...O. NaOH...R bril.	(1) Alm. no dis. (ORT1 sol.). (2) Cotton, alm. white. (3) Wool, ←R bril.	**ROSE BENGAL B [M].**
1111	H_2SO_4...OS1. NaOH...RVS1.	(1) OYT2→ dis. (OY sol.). (2) Cotton, white. (3) Wool, R Bkn (M).	**ALIZARINE RED W Powder [By].** Sodium salt of alizarine monosulphonic acid. — (1871, '76, '78).
1112	H_2SO_4 ...YOS1+. NaOH...(f) R-VR.	(1) V. sl. dis.; pers. ret. compl., redder. (2) Cotton, alm. white. (3) Wool, ←R bril.	**EOSINE 10B [C].** Sodium salt of tetrabromtetrachlorfluoresceine. — (1882).
1113	H_2SO_4...YO. NaOH...(1,2,4), R+; (3)←OR+.	(1) Alm. no dis. (red sol., sl. fluor.). (2) Cotton, alm. white (VRT4). (3) Wool, (1,4) R v. bril.; (2) R-OR v. bril.; (3) ←OR v. bril.	(1) **ERYTHROSINE B [A].** (2) " **BC [B].** (3) " **A Conc., Pure [M].** (4) **ROSE RED EXT. [Fritzsche].** (1) Alkali salt of tetraiodfluoresceine. (Disc. 1876).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Dull VR Bkn (D) powder; e. s. aq. (←RT1+ and VRT2→) w. yel. fluor.; s. alc. (RT2+) w. Y fluor.; s. conc. H_2SO_4 (OY) w. v. sl. green. fluor. — After-chrome test: VRT1+. — Ppt. tests: tannin, –; H_2SO_4, – (OR); NaOH, Cr, Cu and Ca, –. — Spectrum: *10.91*, 13.08 (aq.) — Dyeing: WGS.	**1105**
ORT2 powder; e. s. aq. (OR and VRT1), v. sl. fluor.; s. alc. (VRT1 and RT1) w. yel. green fluor.; s. conc. H_2SO_4 (OY). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH and Ca, –; Cr and Cu, +. — Spectrum: 12.92 (aq). — Dyeing: WA.	**1106**
ORS1 powder; v. e. s. aq. (←RO) w. yel. green fluor.; s. alc. (←RT1 bril.) w. yel. fluor.; s. conc. H_2SO_4 (1) (←OY), (2) (←OY). — Ppt. tests: H_2SO_4, + compl. (ROT1); NaOH and Ca, –; Cr and Cu, +. — Spectrum: (1) *12.41*, (2) *12.38*, (1) 14.86, (2) 14.99, (aq). — Dyeing: WA. — Allied brands: Phloxine [C] [M] [F] [DH]; Erythrosine BB [A]; New Pink.	**1107**
Indigo-like powder; e. s. aq. (RV and RVT2); e. s. alc. (←VR); s. conc. H_2SO_4 (W gray +). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all –; Cr + compl. — Dyeing: WGS.	**1108**
See No. 1177 for description.	
COLORS ON WOOL.	
See No. 1176 for description.	
See No. 796 for description.	
See No. 248 for description.	
ROS2 powder; e. s. aq. (←RO, OR and VRT2) w. alm. no fluor.; e. s. alc. (OR and VRT2) w. sl. green. yel. fluor.; s. conc. H_2SO_4 (YO or OY). — After-chrome test: unchanged. — Ppt. tests: tannin, –; H_2SO_4, + compl. (O); NaOH, –; Cr, + compl.; Cu, +; Ca, – or ±. — Spectrum: (1) *11.86*, 13.84; (3) *11.90*, 13.84 (aq.). — Dyeing: WA, SA. — Allied brands: Rose Bengal [F]; Rose Bengal N [C]; Rose Bengal AT [A] [B]; Rose Bengal NT pure [MO]; Bengal Rosa [DH] [C].	**1109**
Same as above except — Spectrum: *11.82*, 14.10 (aq.).	**1110**
YO powder; e. s. aq. (OY); s. alc. (←GY); s. conc. H_2SO_4 (←YO). — After-chrome test: R. — Mordanted wool tests: w. Cr, VRT1; w Al, R bril. — Ppt. tests: H_2SO_4, – (Y); NaOH, – (dark purple; on dilution (VR and ←VRT2)); Cr, –; Cu, + (ORS2); Ca, –. — Dyeing: WCh. — Allied brands: Alizarine WS powder [M]; Aliz. SA [BA Co]; Aliz. Carmine [BA Co]; Aliz. Red S [B].	**1111**
OS2 powder; e. s. aq. (reddish orange) w. strong fluor.; e. s. alc. (red) w. strong yel. fluor.; s. conc. H_2SO_4 (YO) w. no fluor. — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl. (OR); NaOH, –; Cr, + compl.; Cu, ±; Ca, –. — Spectrum: *12.22*, 14.50 (aq.). — Dyeing: WA, SA. — Allied brands: Phloxine [M] [A]; Phloxine free from Iodine [B]; Phloxine TA [Mo]; Eosine blue [S]; Bengal Rosa B [CJ].	**1112**
(1) R Bkn (M)→, (2) OR dull, (3) OR, (4) ORS2 powders; e. s. aq. ((1) ←RO, (2) O, (3) O–RO, (4) RO and RT2); s. or e. s. alc. ((1, 4) RO, (2, 3) ←O, and RT2 w. sl. yel.-green fluor.); s. conc. H_2SO_4 (OY) without fluor. — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, – (OR–O); Cr, + compl.; Cu, + compl. (←); Ca, –. — Spectra: (1) *12.88*, 15.37 (aq.); *12.07*, 14.45 (alc.). (2) *12.99*, 15.61 (aq.); *12.14*, 14.65 (alc.). (3) *12.86*, 15.38 (aq.); *12.06*, 14.45 (alc.) (4) *12.87*, 15.40 (aq.); *12.03*, 14.44 (alc.). The secondary bands in these spectra are best measured in alcoholic solutions and are then very well defined. — Dyeing: WA. The U. S. "Pure Food Laws" permit the use of dyes having the composition alleged for (1) as food colors. — Allied brands Erythrosine [B] [M] [t.M] [F] [DH]; Erythrosine D [C]; Erythrosine J extra [Mo]; Iodeosine B; Pyrosine B [Mo], etc.	**1113**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1114	H_2SO_4...YO. NaOH...R.	(1) VRT1+ dis. (sol. VRT1). (2) Cotton, white. (3) Wool, R→+, bril.	**EOSINE SCARLET BB EXT. [M].** Potassium or sodium salt of dibromdinitrofluoresceine. — (1875).
1115	H_2SO_4...YO. NaOH...R→.	(1) ½ dis. (yel. green sol.). (2) Cotton, alm. white (RT4). (3) Wool, R→ bril.	**PHLOXINE GA EXT. [M].**
1116	H_2SO_4...YO. NaOH...R→.	(1) ¼ dis. (sol. yel., fluor. on dilution). (2) Cotton, alm. white (RT4). (3) Wool, R→ bril.	**PHLOXINE EXT. [B].**
1117	H_2SO_4...YOS2. NaOH...BVS1.	(1) RVT1 dis. (fuchsine red sol.). (2) Cotton, alm. white (pale violet gray). (3) Wool, R Bkn (M).	**GALLEINE A PASTE [M].** Pyrogallolphthaleine. — (1871).
1118	H_2SO_4...OY. NaOH...VR-R, T1+.	(1) ⅔ dis. (pale red sol. w. green fluor.). (2) Cotton, white. (3) Wool, ←RT1 bril.	**ACID RHODAMINE RRR [B], pat.** 1898.
1119	H_2SO_4...OYT1. NaOH...R-VR, T1.	(1) ⅔ dis. (sol. red w. green fluor.). (2) Cotton, alm. white. (3) Wool, RT1 v. bril.	**ACID RHODAMINE RR [I].** (Intro. 1899).
1120	H_2SO_4...OY−. NaOH...R-VR, T1.	(1) ⅔ dis. (red sol. w. GY fluor.). (2) Cotton, alm. white. (3) Wool, RT1 bril.	**FAST ACID PHLOXINE A [M].** Rhodaminesulphonic ac. deriv. (1899).
1121	H_2SO_4...OY. NaOH...R.	(1) Partial dis. (colored sol.). (2) Cotton, white. (3) Wool, R bril.	**EOSINE B [B].**
			HESSIAN PURPLE N [A].
			SECTION OF ORANGE-RED
			PURPURINE PASTE [B].
1122	H_2SO_4...OS1. NaOH...(f) R Bkn (D).	(1) YT1 dis. (yel. sol.); air ret. GYS1. (2) Cotton, white. (3) Wool, OR–RO sl. dull.	**ALIZARINE ORANGE N [M].** *β*-Nitroalizarine. — (1820, 1874).
1123	H_2SO_4...YO. NaOH...OR.	(1) ROT1 dis. (2) Cotton, white. (3) Wool, ←OR bril.	(1) **ERYTHROSINE G [B].** (2) " **Y EXT. [B].** Alkali salt of diiodofluoresceine. (1875).
1124	H_2SO_4...OY. NaOH...OR.	(1) ⅔ dis. (2) Cotton, white. (3) Wool, OR bril.	**EOSINE EXT. [M].** Alkali salt of tetrabromfluoresceine. (1874).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Y Bkn (v.D) powder; e. s. aq. (OR, RO and RT2) w. v. faint yel. fluor.; s. alc. (RO and VR–R, T2) w. green-yel. fluor.; s. conc. H_2SO_4 (OY–YO). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, +; Ca, ± or –. — Spectrum: 13.38 (aq.). — Dyeing: WA, SA. — Allied brands: Eosine BN [B]; Methyl Eosine [A]; Saffrosine [I]; Eosine Scarlet B [C]; Eosine B [L]; Nopalin [t.M]; Scarlet J, JJ, V, [Mo].	**1114**
ROS1 powder; e. s. aq. (O) w. green-yel. fluor.; e. s. alc. (bril. RT2) w. strong yel. fluor.; s. conc. H_2SO_4 (YO→). — After-chrome test: alm. unchanged. — Ppt. tests: tannin, –; H_2SO_4, + compl.; NaOH, –; Cr, +; Cu, ±; Ca, –. — Spectrum: Double band 12.08, 13.48. (aq.) — Dyeing: WA.	**1115**
ROS1 powder; e. s. aq. (O and RT2) w. strong yel.-green fluor.; e. s. alc. (pale red) w. strong yel. fluor.; s. conc. H_2SO_4 (YO). — After-chrome test: unchanged. — Ppt. tests: tannin, –; H_2SO_4, + compl.; NaOH, –; Cr, +; Cu, –; Ca, –. — Spectrum: *12.42*, 15.77 (aq.). — Dyeing: WA.	**1116**
Brown paste; aq. filtrate clear red; s. NaOH (deep violet); sl. s. alc. (OR Bkn (D)); s. conc. H_2SO_4 (YO dull). — After-chrome test: YO Bkn (M) w. VB streaks. — Mordanted wool test: w. Cr, RVS2. — Ppt. tests: H_2SO_4, + (YOS2); NaOH, – (dark RV sol. diluting to ←VR), Cr, + compl. (RV Bkn (D)); Cu, + compl. (RVS1); Ca, –. — Dyeing: WCh. — Allied brands: Galleine paste [DH] [B] [By]; Alizarine Violet; Anthracene Violet.	**1117**
Red powder; e. s. aq. or alc. (bril. violet red) w. strong yel. fluor.; s. conc. H_2SO_4 (OY). — After-chrome test: alm. unchanged. — Ppt. tests: tannin, –; H_2SO_4, +; NaOH, Cr, Cu and Ca, all –. — Spectrum: 11.68 (aq.). — Dyeing: WGS.	**1118**
R powder; e. s. aq. or alc. (bril. pink) w. strong yel. fluor.; s. conc. H_2SO_4 (←Y). — After-chrome test: VR–R, T1. — Ppt. tests: tannin, –; H_2SO_4, ± (deeper color); NaOH, Cr, Cu and Ca, all –. — Spectrum: 11.88 (aq.). — Dyeing: WGS.	**1119**
Red to violet-red powder; e. s. aq. or alc. (bril. RT2) w. strong yel. fluor.; s. conc. H_2SO_4 (←Y). — After-chrome test: alm unchanged. — Ppt. tests: tannin, –; H_2SO_4, ± (deeper); NaOH, –; Cr, Cu and Ca, all –. — Spectrum: *12.25* (aq.). — Dyeing: WGS.	**1120**
Brown powder; e. s. aq. or alc. (red orange) w. pale green fluor. in aq. and strong green fluor. in alc.; s. conc. H_2SO_4 (OY). — After-chrome test: unchanged. — Ppt. tests: tannin, –; H_2SO_4, + compl. (O→); NaOH, –; Cr, + compl.; Cu, ±; Ca, –. — Spectrum: *12.95* (aq.). — Dyeing: WA, SA.	**1121**
See No. 1003 for description.	
COLORS ON WOOL.	
See No. 819 for description.	
Dark yel. paste; aq. filtrate v. turbid yel. orange; s. alc. (OR–RO); s. conc. H_2SO_4 (O). — After-chrome test: RO Bkn (M–D). — Mordanted wool tests: w. Cr, RO–ROT1; w. Al, OR. — Ppt. tests: H_2SO_4, + (yel.); NaOH, + compl. (red); Cr, + compl.; Cu, + compl.; Ca, + compl. — Dyeing: WCh. — Allied brands: Alizarine Orange A paste [B]; Alizarine OR [By]; Alizarine OG [By]; Aliz. OT, AO (BACo); Aliz. Orange powder [M] [Sodium salt of alizarine Or.]; Aliz. Orange AOP [BACo].	**1122**
←O–OS1 powder; e. s. aq. (O and RT2) w. v. sl. fluor.; e. s. alc. (ROT1 +) w. strong Y fluor.; s. conc. H_2SO_4 (OY). — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, + compl. (red); Ca, –. — Spectrum: (1) *13.18*. — Dyeing: WA. — Allied brands: Dianthine G; Pyrosin J [Mo]; Iodeosine G.	**1123**
←RO+ powder; e. s. aq. (O) w. green fluor.; e. s. alc. (OT1+) w. strong Y fluor.; s. conc. H_2SO_4 (Y+). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, + compl.; Cu, + (red); Ca, –. — Spectrum: *13.40*, 15.65. — Dyeing: WA, SA. — Allied brands: Eosine A [B]; Eosine yel. [A] [K]; Eosine extra [t.M]; [Mo]; Eosine 3J [L] [Mo]; Eosine DH [DH]; Eosine B extra [Mo]; Water Soluble Eosine [M].	**1124**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1125	H_2SO_4...OY→. NaOH...ORT1.	(1) ½–⅔, (RT2), dis. (pink sol. w. yel. green fluor.). (2) Cotton, RT3. (3) Wool, ORT1 bril., approx.	(1) **ACID RHODAMINE R pat.** 1898. [B]. (2) **ACID RHODAMINE [Klp].** (Intro. 1899).
1126	H_2SO_4...OY. NaOH...(cl) OT1 dull; (f) ORT1.	(1) ⅘ dis.; pers. ret. ⅕. (2) Cotton, white. (3) Wool, ORT1 bril., approx.	**FAST ACID EOSINE G [M].** A rhodamine sulphonic ac. derivative. (1898).
1127	H_2SO_4...BVS2. NaOH...BV (fading when rubbed).	(1) RVT2→ dis. (red sol.); pers. ret. VRT4. (2) Cotton, ROT2, uneven, dull stain. (3) Wool, OR Bkn (M).	**ALIZARINE CYANINE R Paste [By].** Essentially a pentaoxyanthraquinone. (1890).
1128	H_2SO_4...(f) RVS1. NaOH...BV.	(1) YOT2 Bkn (M) dis. (sol. YO). (2) Cotton, ORT3 besmeared. (3) Wool OR Bkn (M).	**ALIZARINE BORDEAUX PASTE [By].** Tetraoxyanthraquinone (Quinalizarine). — (1890).
			SECTION OF RED-ORANGE
1129	H_2SO_4...YO. NaOH...←RO.	(1) Abt. ½ dis. (sol. ORT2 w. yel. green fluor.). (2) Cotton, white. (3) Wool, RO v. bril.	(1) **EOSINE A [B].** (2) **" GGF [C].** (3) **" Y [B].** (4) **" YY [B].** (5) **" T [B].** (1,2) Alkali salt of tetrabromfluoresceine. — (1874). **ALGOLE ORANGE R Paste pat. [By].**
			SECTION OF ORANGE
1130	H_2SO_4...O–YO Bkn (M). NaOH...R Bkn (L).	(1) OY–Y, T1 dull dis. (2) Cotton, white. (3) Wool, O Bkn (M–L).	**DUTCH MADDER [AD].** Root of *Rubia tinctoria*, or species of *R.* containing alizarine, etc., partly as glucosides.
1131	H_2SO_4...O. NaOH...YO Bkn (D).	(1) Y Bkn (M) dis. (sol. YT2). (2) Cotton, alm. white. (3) Wool, O, Sl–2→.	**SOLID GREEN O PASTE [M].** Dinitrosoresorcine. (Disc. 1875; intro. 1887).
1132	H_2SO_4...(f) V; (cl) alm. blk. NaOH...BVS1.	(1) OYT2 dis. (sol. YO); pers. dis. YOT4. (2) Cotton, O–YO, S1, *uneven*. (3) Wool, OS1 dull.	**BORDEAUX BX paste [By].** A disazo dyestuff. See opposite page. — (1879).
			SECTION OF YELLOW-GREEN
1133	H_2SO_4...VRS2. NaOH...(f) BVS2.	(1) OYT2 dis. (sol. yel. orange). (2) Cotton, YOS1, besmeared. (3) Wool, ←YOS2+, approx.	**BORDEAUX G PASTE [By].** A sec. disazo dyestuff: aminoazotoluenesulphonic ac. + β-naphtholsulphonic(8) acid. — (1879).
1134	H_2SO_4...R sl. dull. NaOH...RVS1.	(1) OYT2 dull dis. (sol. yel.). (2) Cotton, alm. white. (3) Wool, YOS1.	**ALIZARINE SX EXT. [By].** Isopurpurine; anthrapurpurine; oxyisoanthraflavic acid. — (1873).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
RT1 powder; e. s. aq. (O→) w.v . strong yel. fluor.; e. s. alc. (ORT1) w. strong yel. fluor.; s. conc. H_2SO_4 (GY). — After-chrome test: RT1. — Ppt. tests: H_2SO_4, +; NaOH, –; Cr, +; Cu, – or ±; Ca, –. — Spectrum: 13.06, 12.99 (aq.), approx., (a weak broad band). — Dyeing: WGS.	**1125**
RT1 powder; e. s. aq. (YO) w. strong yel. fluor.; s. alc. (ROT2) w. strong yel. fluor.; s. conc. H_2SO_4 (Y–GY). — After-chrome test: alm. unchanged. — Ppt. tests: tannin, H_2SO_4, NaOH, Cu and Ca, all –; Cr, – or ±. — Spectrum: *12.15*; 15.53 (aq). — Dyeing: WGS.	**1126**
Brown paste; aq. filtrate sl. red; s. NaOH (intense bluish-violet); sl. s. alc. (bril. RT1) w. sl. fluor.; s. conc. H_2SO_4 (VB) w. sl. fluor. — After-chrome test: dark cool gray. — Ppt. tests: H_2SO_4, + compl.; NaOH, + (BVS1); Cr, + compl.; Cu, + compl.; Ca, +. — Dyeing: WCh. — Allied brands: Alizarine Cyanine 2R, 3R, RA extra, NS, WRB, WRR, WRN [By] ["WRS powder" is a sulphonic acid.]	**1127**
Brown paste; aq. filtrate dark orange; s. alc. (←YO); s. conc. H_2SO_4 (V→). — After-chrome test: V Bkn (D)–black. — Mordanted wool tests: w. Cr, RV Bkn (L)–RVS1; w. Al (dull R–VR). — Ppt. tests: H_2SO_4, + compl.; NaOH, – (dark violet sol., diluting to RVT2); Cr and Cu, + compl.; Ca, ±. — Dyeing: WCh. — Allied brand: Aliz. Bordeaux BP paste [By].	**1128**
COLORS ON WOOL.	
ORS1+ powder; e. s. aq. (O, YO and ORT2) w. strong yel. green fluor.; e. s. alc. (OT1+, YO and ORT2) w. v. strong yel. green fluor.; s. conc. H_2SO_4 (←Y). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, +; Cu, +; Ca, –. — Spectrum: (aq.), (1) *13.48*, 15.93; (2) *13.46*, 16.13; (3) *13.48*, 15.80; (4) *13.53*, 15.70; (5) *13.46*, 15.72. — Dyeing: WA, SA. — (1, 2) Allied brands: Eosine [F]; Eosine, yel. [A] [K]; Eosine extra [t.M]; Water Soluble Eosine; Eosine 3J [L] [MO]; Eosine J extra, B extra [Mo]; Eosine 4J extra [L].	**1129**
See No. 1179 for description.	
COLORS ON WOOL.	
YO Bkn [M] powdered root; boiling aq. gives clear YO filtrate; alm. i. c. alc.; sl. s. conc. H_2SO_4 (YOS1). — After-chrome test: YO Bkn [M]. — Ppt. tests: H_2SO_4, +; NaOH, – (OR); Cr, ±; Cu, +; Ca, –. — Dyeing: Cotton w. metallic mordants.	**1130**
Warm gray paste; s. aq. (dull OYS1) turbid filtrate; s. NaOH (Bkn yel.-orange); i. alc.; s. conc. H_2SO_4 (YOS2). — After-chrome test: OYS2. — Ppt. tests: H_2SO_4, + compl.; NaOH, –; Cr, Cu and Ca, all + compl. — Dyeing: W and CFe, Ch. — Allied brands: Dark Green [B] [C] [obsolete]; Chlorin [DH]; Russian Green [L]; Alsace Green F [t.M].	**1131**
OR paste; aq. filtrate turbid O, YO and OYT2; e. s. NaOH (intense purple); s. alc. (YO); s. conc. H_2SO_4 (←RV). — After-chrome test: violet-black. — Ppt. tests: H_2SO_4, + compl.; NaOH, – (v. dark BV–V); Cr and Cu, + compl.; Ca, +. — Dyeing: WGS. — [According to Schultz and Julius this dye may be derived either from aminoazoxylene + β-naptholsulphonic ac. (6), or aminoazoxylenedisulphonic ac. + β-naphthol].	**1132**
COLORS ON WOOL.	
Orange paste; s. hot aq. (red); s. NaOH (violet red); s. alc.; s. conc. H_2SO_4. — After-chrome test: RS2. — Dyeing: WGS.	**1133**
Dark YO paste; alm. i. c. aq.; s. alc. (Y); s. conc. H_2SO (RT1); e. s. NaOH (deep VR). — After-chrome test: OR Bkn (M). — Mordanted wool tests: w. Cr (RV–R); w. al. (RO dull). — — Dyeing: CA1. — Allied brands: Aliz. SX [B]; Aliz. GD [B]; Aliz. RX [M]; Aliz. SC [BACo].	**1134**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
1135	H_2SO_4...(f) OS2. NaOH...YO Bkn (M).	(1) YO–O Bkn (L) dis. (2) Cotton, white. (3) Wool, YO Bkn (M).	**CUTCH EXT. Y [AD].** Solid extracts containing catechin and catechu-tannic ac. from wood of species of *Mimosa, Acacia* and *Areca.*
1136	H_2SO_4...YOS2. NaOH...R dull.	(1) ⅔ dis. (sol. OT3); pers. ret., compl. (2) Cotton, white. (3) Wool, YO Bkn (M).	(1) **BRAZILWOOD [AD].** (2) **LIMAWOOD [AD].** (3) **HYPERNIC [AD].** Containing brazilin, a leuco compound, ($C_{16}H_{14}O_5$), with the real dyestuff brazilein ($C_{16}H_{12}O_5$).
			(1) **INDANTHRENE YELLOW G [B].** (2) **FLAVANTHRENE G [B].** (3) **INDANTHRENE YELLOW R [B].**
1137	H_2SO_4...YOS2-blk. NaOH...BV Bkn (D); blk.	(1) ½ (←YO Bkn) dis.; sol. fuchsine red on dilution. (2) Cotton, white. (3) Wool, YO Bkn (M).	(1) **LOGWOOD CRYSTALS TYPE DW [ALLIGATOR BRAND].** (2) **LOGWOOD CRYSTALS TYPE C [ALLIGATOR BRAND].**
			SECTION OF ORANGE-YELLOW
			AZO YELLOW BYE [PK].
			(1) **ALIZARINE BROWN SO POWDER [B].** (2) **ALIZARINE BROWN POWDER [M].**
			ALIZARINE RS PASTE [B].
			ALIZARINE V [B].
			ALIZARINE RED SDG 20% Paste [M].
1138	H_2SO_4...YOS2. NaOH...OYS2.	(1) OY sl. Bkn dis. (sol. yel.). (2) Cotton, white. (3) Wool, OYS2.	**QUERCITRON BARK EXT. [AD].**
1139	H_2SO_4...OYS2 dull. NaOH...OYS2→.	(1) No dis. (2) Cotton, white. (3) Wool, OY Bkn (L).	**GALLAFLAVIN Paste [B].** An oxidation product of gallic ac. — (1886).
1140	H_2SO_4...OYS2. NaOH...OYS1→.	(1) OYT2→ dis. (2) Cotton, white. (3) Wool, OY Bkn (L).	**ALIZARINE YELLOW A Paste [B].** Trioxybenzophenone. — (1889).
1141	H_2SO_4...OY. NaOH...OY.	(1) YT3 dis. (yel. sol. w. strong green fluor.). (2) Cotton, white. (3) Wool, OY→ bril.	(1) **URANINE [M].** (2) " **N [M].** (3) " **[B].** (4) **FLUORESCEINE [P].** Sodium or potassium salt of fluoresceine. — (1871).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
Brown-black thin paste w. astringent taste; sl. s. aq. (pale YOS1); sl. s. alc. (YOS1); sl. s. conc. H_2SO_4 (dull ←O). — After-chrome test: ←OR Bkn (v.D). — Ppt. tests: H_2SO_4, +; NaOH, − (dark OR); Cr, +; Cu, ±; Ca, −. — Dyeing: CD and aftertreated w. Cr, Cu; also used w. mordant colors like logwood and on silk w. Fe. — Allied brands: Catechu, Gambier, Japan Earth.	1135
(1) O Bkn (D) wood chips s. hot aq. (RO and OYT2), (2) YOS2 wood chips s. hot aq. (O–YO and YT2), (3) YO–O, S2 wood chips s. hot aq. (O and YT2), (1, 2, 3) w. sl. green. fluor.; s. alc. (Y); s. conc. H_2SO_4 (OYS2) w. green. fluor. — After-chrome test (1): YO Bkn (M–D). — Ppt. tests: H_2SO_4, −; NaOH, − (OR–R); Cr, + (1, 3) (OYS2), (2) (OYS1); Cu, ± (red), (2, 3), − (RO); Ca, −. — Test 15 (Nitrous Ac.): OYS2. — Dyeing: WCh; cot. print. w. met. mordants. — (1) Wood of *Caesalpina Braziliensis* imported from Brazil. (2) Wood of species *Caesalpina* from Tehuantepec, Pera, Altata and Manzanilla. — Allied brands: Pernambuco Wood (*C. Crista*), Sapan Wood (*C. Sappan*), Nicaragua, Peach, or St. Martha Wood, (*C. Echinata*), and Jamaica Wood, (*C. Vesicaria*) are other "Soluble Redwoods" which sell as "Brazilwood" or "Peachwood," though the amount of coloring matter in the different species varies greatly.	1136
See No. 1179 for description.	
(1) Dark brown or (2) black fragments; s. aq. (OR and OYS1); s. alc. (YT1); s. conc. H_2SO_4 (YOS1). — After-chrome test: YOS3 w. blk. streaks. — Ppt. tests: H_2SO, − (←YO); NaOH, − (BVS2); Cr, ± (dull OYS2); Cu, ± (1) (RV Bkn (D)), (2) (V Bkn (D)); Ca, −.	1137
COLORS ON WOOL.	
See No. 914 for description.	
See No. 915 for description.	
See No. 904 for description.	
See No. 905 for description.	
See No. 906 for description.	
Reddish-brown paste (sweet smelling w. astringent taste); s. aq. (YOS1 and OY dull); sl. s. alc. (YT3); s. conc H_2SO_4 (Y and YOS2) w. green. fluor. — After-chrome test: OYS3. — Ppt. tests: H_2SO_4 and Cu, +; NaOH (OS2) and Ca, −; Cr, − or ±. — Quercitron bark is the inner bark of the American oaks, *Quercus nigra* or *Q. tinctoria*. Its essential coloring matter is quercetin, tetraoxyflavonol, wh. is present mainly as the glucoside quercitrin. These coloring matters are e. s. alc. or alkalies and d. s. h. aq.	1138
GYT2+ paste; alm. i. aq. (GYT2 turbid filtrate); w. alc. GYT2 filtrate; s. conc. H_2SO_4 (GY). — After-chrome test: OY Bkn (M). — Mordanted wool tests: w. Cr (YT1); w. Al (Y–YT1). — Dyeing: WCh.	1139
Y Bkn (L) paste; alm. i. aq.; s. alc. (OYS1); s. conc. H_2SO_4 (Y and OY). — After-chrome test: unchanged. — Mordanted wool tests: w. Cr (OYS1); w. Al (OYS1). — Dyeing: WCh.	1140
(1) Reddish-brown lumps w. high cantharides lustre; (3) ROS1 powder; (2,4) RO–O powder; e. s. aq. (OY and Y) w. strong green. fluor.; s. alc. (Y) w. strong green. fluor.; s. conc. H_2SO_4 (←GY) w. green. fluor. After-chrome test: (3) ←YT2 dull. — Ppt. tests: H_2SO_4, ± or − (←GY); NaOH, −; Cr, + or ±; Cu, + compl. (YO); Ca, −. — Dyeing: Silk and wool. — Allied brands: Uranine [A] [L] [t.M] [S] [F]; Fluoresceine [C] [DH] [L].	1141

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF YELLOW
1142	H_2SO_4...dull ORS2. NaOH...G Bkn (D).	(1) YO Bkn (v.L) dis. (yel. sol.). (2) Cotton, besmeared. (3) Wool, Y Bkn (M)	**ALIZARINE BROWN [M].** Trioxyanthraquinone. — (1877).
1143	H_2SO_4...OR Bkn (D). NaOH...G Bkn (D).	(1) Alm. compl. dis. (sol. Y→). (2) Cotton, dirty brown stain. (3) Wool, Y Bkn (M).	**ALIZARINE BROWN [B].** α-nitroalizarine. — (1877).
1144	H_2SO_4...deep ←OS1. NaOH...←OY.	(1) Sl. dis. (yel. sol.). (2) Cotton, alm. white. (3) Wool, Y bril.	**QUINOLINE YELLOW [B].**
1145	H_2SO_4...←YOS2. NaOH...YOS1.	(1) Y dis. (yel. sol.). (2) Cotton, YT2–. (3) Wool, Y sl. dull.	**EXTRACT FUSTIC Y [AD].**
1146	H_2SO_4...YO dull. NaOH...(1) OY; (2,3) Y.	(1) (1) Sl. (2,3) YT2+ dis. (sol. deep Y). (2) Cotton, white. (3) Wool, (1,2) Y→ bril.; (3) Y *bril.*	(1) **QUINOLINE YELLOW, WATER SOL. [A].** (2) **CHINALDINE YELLOW G [I].** (3) **KITON YELLOW G [I].** (1) Sodium quinophthalonedisulphonate. — (1882).
1147	H_2SO_4...YO dull. NaOH...YT1.	(1) YT2 dis. (2) Cotton, white. (3) Wool, YT1.	**AMERICAN SAFFRON.** Composite flower of *Carthamus tinctorious*, containing carthamine, $C_{14}H_{14}O_7$, and a yellow dyestuff.
			(1) **CURED LOGWOOD [AD].** (2) **UNCURED JAMAICA LOGWOOD [AD].**
			SULPHON YELLOW 5G [By].
1148	H_2SO_4...OY–YO, S1. NaOH...OY.	(1) YT2 dis. (Y sol.). (2) Cotton, alm. white (YT4). (3) Wool, (1) ←Y dull; (2) Y sl. dull.	(1) **FUSTIC CRYST. [AD].** (2) **CUT FUSTIC [AD].** (2) Chips of heartwood of a tropical tree, *Morus tinctoria* or *Maclura tinctoria*, containing morin (tetraoxyflavonol) and maclurin (pentaoxybenzophenone).
1149	H_2SO_4...OY–YO, S1. NaOH...OYS1.	(1) No dis. (2) Cotton, alm. white. (3) Wool, YT1→.	**PERSIAN BERRY EXT., PURE [G].** Extract of berries from *Rhamnus infectoria*, *R. tinctoria*, etc., containing quercetin ($C_{15}H_{10}O_7$), rhamnetin ($C_{16}H_{12}O_7$), and rhamnazin ($C_{17}H_{14}O_7$), etc., as glucosides.
1150	H_2SO_4...OYS2. NaOH...OYS1–2.	(1) No dis. (2) Cotton, YT3. (3) Wool, Y Bkn (M)+.	(1) **ORANGE FLAVINE [AD].** (2) **LEMON FLAVINE [AD].** Flavine is said to be impure quercitrin precipitated by cooling a hot aq. ext. of the bark, or an impure quercetin precipitated by ac. from an alkaline extract.
1151	H_2SO_4...←YT1 dull. NaOH...YO–O.	(1) Alm. no dis. (bright yel. sol.). (2) Cotton, white. (3) Wool, YT1→ sl. dull.	**ANTHRACENE YELLOW PASTE [By].** Dibromdioxy-β-methylcoumarine. (1889).

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark brown paste; alm. i. aq. (turbid brown filtrate); s. alc. (YOS1 and Y); s. conc. H_2SO_4 (ORS1). — After-chrome test: YO Bkn (D–M). — Mordanted wool tests: w. Cr (YO Bkn (D)); w. Al (OY Bkn (M)). — Dyeing: WCh. — Allied brands: Anthracene Brown paste [B] [H]; Anthracene Brown R and G paste [By]; Anthragallol.	1142
Same as above except mordanted wool tests: w. Cr (OY Bkn (D)); w. Al (OY Bkn (D)). — Allied brand: *α*-Nitroalizarine [M].	1143
OY powder; s. aq. (Y and GYT1); sl. s. alc. (GYT1); s. conc. H_2SO_4 (OY and ←YO). — After-chrome test: alm. unchanged. — Ppt. tests: H_2SO_4, – ; NaOH, – (OY); Cr, + ; Cu, – ; Ca, –, — Dyeing: SS, WGS.	1144
Dark reddish-brown paste w. sweet odor and astringent taste; s. aq. (←OY and YT1→ filtrate); s. alc. (Y filtrate); s. conc. H_2SO_4 (Y and YO) w. green. fluor. — After-chrome test: YOS3→. — Ppt. tests: H_2SO_4, +; NaOH, – (ORS2); Cr, ±; Cu, + compl.; Ca, –.	1145
(1) ←OY powder; (2) Y dull powder; (3) Y powder; s. aq. (←Y and GYT1); sl. s. alc. (GYT1); s. conc. H_2SO_4 (OY and ←YO). — After-chrome test: (2,3) GY; (1) unchanged. — Ppt. tests: H_2SO_4, Cu and Ca, all –; NaOH, – (OY); Cr, + or ±. — Dyeing: SS, WGS. — (1) Allied brands: Quinoline Yellow [B] [By] [S] [M].	1146
The small dried flowers show RO 5-lobed corallas forming slender tube from which project yel. styles and filaments. They have a peculiar sl. aromatic odor. The cartharmin is alm. i. aq., while the yel. coloring matter is e. s. aq. For isolation and spectroscopic identification of carthamin, cf. F. Q. S., p. 265. For histology of flowers, cf. Winton, p. 629. Used in medicine and as food color, as adulterant or substitute for true saffron (*Crocus Sativus*). — sl. s. c. aq.; s. hot aq. (OY and GYT1 filtrate); i. alc.; s. conc. H_2SO_4 (YOS1 and OY). — After-chrome test: Y sl. Bkn. — Ppt. tests: H_2SO_4, NaOH, Cr and Ca, all –; Cu, +. — Allied brands: Safflower; African, False, Bastard or Dyer's Saffron; Safflor (Ger.).	1147
See No. 255 for description.	
See No. 940 for description.	
(1) Dark brown fragments; (2) OY–Y dull wood chips; alm. i. c. aq.; s. hot aq. (OY→ and YT2); sl. s. alc. (1) (YT1); (2) (GYT2); s. conc. H_2SO_4 (1,2) (Y and YOS1), (1) w. green. fluor. — After-chrome test: OYS2. — Dyeing: WCh, WAl, giving brownish-olive and old gold shades, and for neutralizing the bluish-black tone of logwood blacks. — Allied brands: Old Fustic; Yellow Wood; (Yellow Brazil Wood); Dyer's Mulberry; Cuba Wood; Bois Jaune (Fr); Gelbholz (Ger.).	1148
Brown-black paste w. astringent taste; s. aq. (OYS2 and dull Y); sl. s. alc. (YT1); s. conc. H_2SO_4 (Y and YOS1) w. green. fluor. — After-chrome test: OYS1-2. — Ppt. tests: H_2SO_4, Cr, Cu and Ca, all –; NaOH, – (ORS2). — Dyeing: printing w. Cr, Al, or Sn. — Allied brands: Yellow Berries; Kreutzbeeren or Gelbbeeren (Ger.).	1149
(1) Y Bkn (M), (2) YT2, powders; i. aq.; i. alc.; s. conc. H_2SO_4 (Y→) w. green. fluor. — After-chrome test: OYS2+. — Dyeing: used w. Al, Cr, Fe and Sn mordanted wool in cot. print., and in toning logwood blacks and cochineal scarlets.	1150
Y Bkn (L) paste; alm. i. aq. (filtrate turbid, but colorless); s. alc. (dull YT2); s. conc. H_2SO_4 (GY–Y). — After-chrome test: Y–YS1. — Dyeing: WCh.	1151

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF YELLOW-GREEN
			ALGOLE DARK GREEN B Paste pat. [By].
			SECTION OF GREEN
1152	H_2SO_4...R Bkn (D). NaOH...BG Bkn (D).	(1) R Bkn (M) dis. (red sol.). (2) Cotton, light cool gray. (3) Wool, G Bkn (M).	(1) **ALIZARINE BLACK S** [M]. (2) " " **P** [M]. (2) Flavopurpurinequinoline. (1) Bisulphite compound of (2). — (1892).
1153	H_2SO_4...(f) G Bkn (D). NaOH...GYS2 dull.	(1) O Bkn (M) dis. (YO sol.). (2) Cotton, white. (3) Wool, G Bkn (M).	**COERULEINE SW Paste** [M]. Bisulphite compound (apply T.4) of Coeruleine. — (1879).
			SECTION OF BLUE-GREEN
			ALGOLE GREEN B [By].
1154	H_2SO_4...(f) BGS1. NaOH...BGS1+.	(1) YO dis. (sol. O); pers. ret., G Bkn. (2) Cotton, white. (3) Wool, ←BG–BGS1.	**ALIZARINE GREEN CK Powder** [By].
1155	H_2SO_4...(f) BGS1. NaOH...GS1.	(1) OT1+ dis. (O→ sol.). (2) Cotton, white. (3) Wool, ←BG.	**ANTHRAQUINONE GREEN GNX** [B].
1156	H_2SO_4...(f) GBS1. NaOH...BG.	(1) YO–O dis. (sol. YO); pers., BG Bkn (M). (2) Cotton, white or BGT3. (3) Wool, BG.	(1) **FAST CHROME GREEN** [H]. (2) **ANTHRACENE CHROMATE GREEN FF** [C]. [M]. (3) **MONOCHROME GREEN AG**
1157	H_2SO_4...B Bkn (D)→. NaOH...GB→.	(1) OT2 dis. (sol. O). (2) Cotton, white. (3) Wool, BG–GB.	**ALIZARINE ASTROLE G** [By].
1158	H_2SO_4...(f) BS2. NaOH...(f) RV Bkn (M).	(1) RT3 dis. (sol. red). Air ret., B V Bkn (M). (2) Cotton, alm. white. (3) Wool, BGS1.	**ACID ALIZARINE GREEN G** [M]. Sodium disulphydrotetroxyanthraquinonedisulphonate. — (1893).
1159	H_2SO_4...(f) (1) RVS2; (2) (f) RV Bkn. NaOH...BGS1.	(1) VRT2 dis. (red sol.). (2) Cotton, alm. white. (3) Wool, BGS1.	(1) **ALIZARINE GREEN SC Paste** [B]. (2) **ALIZARINE GREEN Paste** [B].
			SECTION OF GREEN-BLUE
			ALGOLE BLUE 3G PASTE [By].
1160	H_2SO_4...VR Bkn (L–M). NaOH...(2,3) GBS1; (1) ←GB.	(1) Dull light red dis. (sol. light red). (2) Cotton, (1) white; (2) light cool gray. (3) Wool, ←GBS1.	(1) **ANTHRAQUINONE BLUE SR Paste** [B]. (2) **ANTHRAQUINONE BLUE SR EXT.** [B]. (3) **ANTHRAQUINONE BLUE SR EXT. Powder** [B]. (4) **META CHROME BLUE G 276 Powder** [A].
1161	H_2SO_4...(f) GBS2. NaOH...GB.	(1) YO dis. (sol. RO). (2) Cotton, white. (3) Wool, GB.	**ALIZARINE BLUE AS** [By].

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
See No. 1184 for description.	
COLORS ON WOOL.	
(2) Black paste; (1) Dark brown paste; alm. colorless aq. filtrate; NaOH alm. black sol.; s. alc. (OS1); s. conc. H_2SO_4 (R Bkn (L) +). — After-chrome test: Warm gray (D)–brown. — Dyeing: WCh.	**1152**
Black paste; s. aq. (turbid dull G Bkn (D) filtrate); d. s. alc. (GY Bkn (M)); s. conc. H_2SO_4 (v. dull YG Bkn (D)). — After-chrome test: GY Bkn (D). — Ppt. tests: H_2SO_4, +; NaOH, ±; Cr, + compl.; Cu, –; Ca, +. — Dyeing: WCh. — Allied brands: Coeruleine S powder or paste [B] [By] [M] [DH].	**1153**
COLORS ON WOOL.	
See No. 1185 for description.	
Description same as for No. 1156 below.	**1154**
Description same as for No. 1156 below.	**1155**
BGS3 powder; e. s. aq. (BG and BGT2); e. s. alc. (BG); s. conc. H_2SO_4 (←B Bkn). — After-chrome test: unchanged. — Ppt. tests: H_2SO_4, NaOH, Cu, Cr and Ca, all –. — Dyeing: WCh.	**1156**
GB Bkn (D) powder; e. s. aq. (GB–BG); s. alc. (GBT1); s. conc. H_2SO_4 (BS2→). — Ppt. tests: H_2SO_4, – (dark B); NaOH, –; Cr, +; Cu and Ca, –. — Dyeing: WGS, WCh.	**1157**
Black powder; s. aq. (deep V and BV); i. alc.; s. conc. H_2SO_4 (VBS2 and BT1) w. red fluor. — After-chrome test: ←BGS1. — Ppt. tests: H_2SO_4, – (GBS2); NaOH, ± (←RV); Cr, + compl.; Cu, + compl.; Ca, + compl. — Gives deep coloration in Test 4. — Dyeing: WGSCh. — Allied brands: Acid Alizarine Green B [M].	**1158**
(1) Dark brown paste; clear OS1 aqueous filtrate (BG on boiling); alc. filtrate OS1; s. conc. H_2SO_4 (VR). (2) Black paste; aq. filtrate dull VR; sl. s. alc. (pale V); s. conc. H_2SO_4 (V). — (2) Mordanted wool tests: w. Cr, GB Bkn (M); w. Al, GB Bkn (M). — Ppt. tests: H_2SO_4, (1) ±, (2) – (OS1); NaOH, –, (1) (BGS2), (2) (BGS1); Cr, +; Cu and Ca, –. — Dyeing: WCh.	**1159**
COLORS ON WOOL.	
See No. 1186 for description.	
(1,2) Dark blue paste; turbid GB–BG aqueous filtrate. (3) Black powder; s. aq. (GBT1); s. alc. (GB); s. conc. H_2SO_4 (1,2) (RV), (4) (RV–VR dull). — After-chrome test: (1) BGS1; (2,4) BGS1→. — (1) Mordanted wool tests: w. Cr, ←GB dull; w. Al, GB. — (1,2) Ppt. tests: H_2SO_4, +; Cr, +; NaOH, Cu and Ca, all –. — Dyeing: WGSCh.	**1160**
BS2 dull powder; s. aq. (GB); s. alc. (GB); s. conc. H_2SO_4 (GBS1). — After-chrome test: sl. darker and duller. — Ppt. tests: H_2SO_4, – (V→); NaOH, Cr, Cu and Ca, all –. — Dyeing: WGS.	**1161**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF BLUE
1162	H_2SO_4...VRS2. NaOH...BGS1.	(1) R Bkn (M) dis.; air ret. BT2. (2) Cotton, (1) violet gray, (2) brown gray, besmeared. (3) Wool, B Bkn (M).	(1) **ALIZARINE BLUE GWDS [By].** (2) **ALIZARINE BLUE RDS Paste [By].**
1163	H_2SO_4...←OR Bkn (L)–gray. NaOH...GBT2.	(1) YO Bkn (L) + ; air ret. red-gray (D). (2) Cotton, white. (3) Wool, B Bkn (L).	(1) **MONO CHROME GRAY G [M].** (2) **RESIST GRAY G [M].**
1164	H_2SO_4...OYS2 NaOH...BS2.	(1) RT2 dull dis. (sol. OR). (2) Cotton, VT2–3→. (3) Wool, B→ sl. dull.	**BRILLIANT ANTHRAZUROL [B].**
1165	H_2SO_4...YS1. NaOH...BS2.	(1) R dis. (sol. R); pers. ret., B Bkn. (2) Cotton, white. (3) Wool, BT1; BS1.	**ALIZARINE BLUE SAP POWDER [By].**
			INDANTHRENE BLUE GCD [B] **" " RS [B]** **" " RC [B]** **INDIGO G PASTE [B]** **" BROMINATED R [B]** **DIANTHRENE BLUE 2B 51% Klp]** **INDIGO BROMINATED RB [B].**
1166	H_2SO_4...(f) ←BS2. NaOH...B.	(1) OYT1 dis. (sol. OY). (2) Cotton, white. (3) Wool, B.	**ALIZARINE BLUE SKY Powder [By].**
1167	H_2SO_4...V→. NaOH...BT1.	(1) ←OYT1–2 dis. (sol. OY). (2) Cotton, white. (3) Wool, BT1 +.	(1) **CYANTHROL R [B].** (2) **" RB [B].**
			SECTION OF VIOLET-BLUE
1168	H_2SO_4...VRS1. NaOH...BG.	(1) R Bkn (M); air ret. BT2→. (2) Cotton, BV Bkn (L), uneven. (3) Wool, VB Bkn (M) and (D).	**ALIZARINE BLUE DNW [M].**
1169	H_2SO_4...(f) OY Bkn (M). NaOH...VBS1.	(1) ORT2 dis. (sol. OR). (2) Cotton, V Bkn (M), uneven. (3) Wool, VB.	**ALIZARINE BLUE BR 3G [By].**
			INDANTHRENE BLUE RS [B] **" " RSP [B]** **" " RZ [B]** **" " RRZ [B].**
			SECTION OF BLUE-VIOLET
1170	H_2SO_4...(f) BS2. NaOH...B bril.	(1) Y dis. (yel. sol.). (2) Cotton, white. (3) Wool, BV bril.	**ALIZARINE BLUE JR [By].**
1171	H_2SO_4...←V Bkn (D). NaOH...BGS1.	(1) RV Bkn (M) dis.; air ret. V Bkn (M). (2) Cotton, B Bkn (v.L). besmeared. (3) Wool, BV Bkn (D).	**ALIZARINE INDIGO BLUE S [B].** Mixture of bisulphite compounds of tetra- and pentaoxyanthraquinonequinoline and their sulphonic acids. — (1888).

Appearance (T.3). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Black paste; alm. i. aq.; s. alc. (R); s. conc. H_2SO_4 (VR). — After-chrome test: VB Bkn (D). — Dyeing: WCh.	**1162**
Black powder; e. s. aq. (deep B→ Bkn (D)); sl. s. alc. (dull GBT1); s. conc. H_2SO_4 (R Bkn (D)). — After-chrome test: BG–G Bkn (L). — Ppt. tests: H_2SO_4 and Cr, +; NaOH, Cu and Ca, all −.	**1163**
Sl. lustrous black powder; e. s. aq. (deep BV); sl. s. alc. (BT1); s. conc. H_2SO_4 (dull Y and OYS2). — After-chrome test: BG Bkn (D). — Ppt. tests: H_2SO_4, + compl. (RV); NaOH, −; Cr, Cu and Ca, all +.	**1164**
Dark YG to black powder; s. aq. (B); s. alc. (GB); s. conc. H_2SO_4 (Y). — After-chrome test: BGS2. — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all −; Cr, + compl. — Dyeing: WGS, WCh.	**1165**
See Nos. 1188, 1187, 1190, 129, 131, 133 and 132 for descriptions.	
Blue-black powder; s. aq. (B); s. alc. (B); s. conc. H_2SO_4 (BS1). — After-chrome test: GBS1. — Ppt. tests: H_2SO_4 and NaOH, +; Cr, + compl.; Cu, −; Ca, ±. — Dyeing: WCh.	**1166**
(1) VBS3 powder. (2) BS3 dull powder; e. s. aq. (B); s. alc. (VB and B); s. conc. H_2SO_4 (V). — After-chrome test: BG Bkn (M). — Ppt. tests: H_2SO_4, ±; NaOH, Cu and Ca, all −; Cr, +. — Dyeing: WGS.	**1167**
COLORS ON WOOL.	
Black paste; w. aq., v. turbid B Bkn filtrate; sl. s. alc. (pale V Bkn filtrate); s. conc. H_2SO_4 (VR). — Mordanted wool tests: w. Cr, (BT2); w. Al, (BVT1+). — Spectrum: *7.06;* 8.63, 10.40, 12.40, 14.83, (alc.). — Dyeing: WCh. — Allied brands: Alizarine Blue paste (B); Alizarine Blue R (By); Alizarine Blue A, F, R, RR, [M]; Alizarine Blue AB [BA Co].	**1168**
Sl. lustrous black powder; s. aq. (BV); sl. s. alc. (pale VB); s. conc. H_2SO_4 (OYS1). — After-chrome test: BGS2. — Ppt. tests: H_2SO_4 (VR), Cr (V) and Cu (RV), all + compl.; NaOH (VB) and Ca, −. — Dyeing: WCh.	**1169**
See Nos. 1187 and 1189 for descriptions.	
COLORS ON WOOL.	
VS3 powder; s. aq. (BV); s. alc. (BV); s. conc. H_2SO_4 (BS1). — After-chrome test: (BG–GB, S1). — Ppt. tests: H_2SO_4, NaOH, Cu and Ca, all −; Cr, +. — Dyeing: WCh.	**1170**
Black paste; aq. filtrate dull turbid RV→; alc. filtrate dull VR; s. conc. H_2SO_4 (VB). — Mordanted wool tests: w. Cr, B Bkn (M); w. Al, BS2 dull. — Ppt. tests: H_2SO_4, ± (R–OR Bkn); NaOH, − (BGS2→); Cr, +; Cu and Ca, −. — Dyeing: WCh.	**1171**

No.	COORDINATION TESTS. (1) H_2SO_4 (T.13). (2) NaOH (T.14).	(1) Color discharge and returns in Tests 8, 9 and 10. (2) Cotton color in Test 5. (3) Wool color in Test 5.	Trade name. Constitutional name. Date of discovery or introduction.
			SECTION OF VIOLET
1172	H_2SO_4...VRS2. NaOH...BGS1.	(1) R Bkn (M) dis. (sol. red). (2) Cotton, alm. white. (3) Wool, V Bkn (D) to gray.	**ALIZARINE BLUE Powder S [B].** Sodium bisulphite comp. of alizarine blue (dioxyanthraquinonequinoline). — (1881).
1173	H_2SO_4...(f) BV Bkn (D). NaOH...BVS2.	(1) OT1 dis. (sol. OYT3). (2) Cotton, white. (3) Wool, VT1 and ←VS2.	**ACID ALIZARINE BLUE BLACK 3B [M].**
			INDANTHRENE VIOLET RT [B].
			SECTION OF RED-VIOLET
1174	H_2SO_4...(f) VR; (cl) alm. blk. NaOH...BVS2→.	(1) YT2 dis. (sol. yel.); air ret. YOT2 in 1 min.; pers., OT2+. (2) Cotton, white. (3) Wool, RV.	**ALIZARINE BLACK 3B [By].**
1175	H_2SO_4...R. NaOH...VBS1 dull.	(1) ROT3 dis. (sol. OT1). (2) Cotton, white. (3) Wool, RV.	**ALIZARINE NAVY BLUE R, Paste [By].**
			SECTION OF GRAY
			INDANTHRENE BROWN B [B] **INDANTHRENE GRAY B [B]** **MELANTHRENE B Paste (Cont.)** **INDANTHRENE VIOLET R EXT. [B]** **INDANTHRENE DARK BLUE BB Conc. [B]** **INDANTHRENE DARK BLUE B Conc. [B]** **INDANTHRENE GREEN B [B]** **INDANTHRENE DARK BLUE B [B]**

Appearance (T.2). Solutions (T.3). Precipitations (T.18a to d). Spectra (T.22). Usual manner of dyeing. Trade names of alleged identical or closely allied dyestuffs.	No.
COLORS ON WOOL.	
Dark reddish-brown powder; s. aq. (ORS1 and YO); alc. filtrate alm. colorless; s. conc. H_2SO_4 (OS1, changing slowly to VR). — After-chrome test: BV Bkn (D) to dark gray. — Mordanted wool tests: w. Cr, (BT1 +, dull). — Ppt. tests: H_2SO_4, – ; NaOH, – (BVS2 changing slowly to BG); Cr and Ca, + ; Cu, –. — Dyeing: WCh. — Allied brands: Alizarine Blue paste [B] [By]; Anthracene Blue S; Aliz. Blue Sol. powder [BACo].	**1172**
Black powder; s. aq. (deep RV and VR–RV); sl. s. alc. (V); s. conc. H_2SO_4 (VBS1). — After-chrome test: BG–B Bkn (D). — Ppt. tests: H_2SO_4, – (VR); NaOH, – ; Cr, + (VR); Cu and Ca, –. — Dyeing: WGSCh.	**1173**
See No. 1193 for description.	
COLORS ON WOOL.	
Black paste; aq. filtrate RV; S. NaOH (deep violet); s. alc. (RV); s. conc. H_2SO_4 (VR). — After-chrome test: green-gray to black. — Ppt. tests: H_2SO_4, – ; NaOH, – (dark V); Cr, + compl.; Cu, – (BV); Ca, –. — Dyeing: WCh.	**1174**
Black paste; s. aq. (BV); s. alc. (VRT1→); s. conc. H_2SO_4 (R). — After-chrome test: BGS2. — Mordanted wool tests: w. Cr, (V Bkn (M)); w. Al. (←RV sl. dull.) — Ppt. tests: H_2SO_4, –; NaOH, – (dark blue); Cr, + ; Cu, – (bluer); Ca, –. — Printing.	**1175**
COLORS ON WOOL.	
See Nos. 1180, 1195, 1195, 1194, 1191, 1192, 1183, and 1192 for descriptions.	

DYES OF GENUS IV, HYDRO-

DIVISION B,

(COMPRISING COLORS WHICH ARE INSOLUBLE (TEST 3) IN COLD WATER, ALCOHOL, OR DILUTE IN TEST 5; AND WHICH WHEN DYED UPON COTTON BY THE METHOD OF TEST 6

No.	COORDINATING SEQUENCE. (1) Cotton color, vat dyed (T.6). (2) H_2SO_4 (T.13 on vat dyed cotton).	(1) Rongalite discharge on vat dyed cotton (T.11). (2) Color of hydrosulphite vat in T.6.	Trade name. Constitutional name. Date of discovery or introduction.
1176	Cotton, VRT1→. H_2SO_4...(cl) VR dull; (f) VS2→.	(1) Alm. no dis. (4 min.). (2) Vat., R.	**ALGOLE RED B [By].**
1177	Cotton, VR Bkn (D). H_2SO_4...YS2.	(1) Y Bkn (v.D) dis. (2 min.). (2) Vat., OY Bkn.	**INDANTHRENE MAROON R [B].** Introduced 1905 as Fuscanthrene B (B).
1178	Cotton, OR Bkn (L+). H_2SO_4...(cl) OR Bkn (L+); (f)←BG.	(1) O–OY Bkn (M) dis. (4 min.). (2) Vat., R→.	**ALGOLE ORANGE R Paste pat. [By].**
1178-1	Cotton, ←ORT2+. H_2SO_4...YOT1.	(1) R Bkn (M–D) dis. (4 min.).	**ALGOLE RED [By].**
1179	Cotton, OY bril. H_2SO_4...(f and cl) YO–OY.	(1) B-blk. dis. (4 min.). (2) Vat., opaque YG.	(1) **INDANTHRENE YELLOW G [B].** (2) **FLAVANTHRENE G [B].** (3) **INDANTHRENE YELLOW R [B].** Dianthraquinonyldiazine. — (1901).
1180	Cotton, OY Bkn (D). H_2SO_4...(f) YO Bkn (D).	(1) Black (2 min.). (2) Vat., black.	**INDANTHRENE BROWN B [B].** Formerly Rufanthrene B [B].
1180-1	Cotton, OY–OYT1. H_2SO_4...YT1.	(1) OT1→ dull dis. (4 min.).	**ALGOLE YELLOW R [By].**
1181	Cotton, OY Bkn (D). H_2SO_4...(f) W gray (D).	(1) Black (2 min.). (2) Vat., VR Bkn (D).	**ALGOLE BROWN B [By].**
1182	Cotton, GY Bkn (D). H_2SO_4...(f) GY Bkn (D).	(1) Bluish blk. dis. (2 min.). (2) Vat., GB Bkn.	**INDANTHRENE OLIVE G [B].**
1183	Cotton, G Bkn (D+). H_2SO_4, (f) ←VS3.	(1) V black dis. (2 min.). (2) Vat., VB.	**INDANTHRENE GREEN B [B].** Formerly Viridanthrene B paste [B].
1184	Cotton, G Bkn (D). H_2SO_4...(f) N gray-blk.	(1) Black dis. (2 min.). (2) Vat., VR Bkn.	**ALGOLE DARK GREEN B Paste pat. [By].**
1185	Cotton, BGS1. H_2SO_4...(cl) ←BGS1.	(1) GB–BG, S3 dis. (2 min.). (2) Vat., VB.	**ALGOLE GREEN B [By].**
1186	Cotton, GB. H_2SO_4...(f) YGS2.	(1) Black dis. (2 min.). (2) Vat., B.	**ALGOLE BLUE 3G PASTE [By].**

SULPHITE VAT COLORS OF

SUBDIVISION 2.

ALKALI; WHICH DO NOT COLOR COTTON DIRECTLY TO A UNIFORM TONE AS DEEP AS TINT 2 ARE NOT DISCHARGED BY RONGALITE BEYOND THE LIMITS SET IN TEST 11.)

Color on direct dyed wool (" Wool d.," T.5). Color on wool dyed in hydrosulphite vat (" Wool v.," T.6). Physical characteristics and solubilities (Tests 2 and 3). Sulphide test (T.4). Spectra. Names of alleged identical or closely allied dyestuffs.	No.
Wool d., RT2 uneven; wool v., RT2 +. — Dark red paste; aq. and alc. filtrates yellowish; s. conc. H_2SO_4 (V–RV). — Sulphide test, – (30 sec.).	**1176**
Wool d. or v., VR Bkn (M)→, approx. — Black paste; aq. filtrate turbid; alc. filtrate (R Bkn (M)); s. conc. H_2SO_4 (Y Bkn (M)). — Sulphide test, + (10 sec.).	**1177**
Wool d., ROT1 uneven; wool v., OT1. — ORS3 paste; i. aq.; s. conc. H_2SO_4 (BG). — Sulphide test, – (30 sec.).	**1178**
Wool d., ORT1. — RS1 paste; i. c. aq., alc., or NaOH; e. s. conc. H_2SO_4 (R and VRT2→). — Sulphide test: – (20 sec.).	**1178-1**
Wool d., (1,2) YO, (3) YO→; Wool v., OY. — YO paste; i. aq. or alc.; s. conc. H_2SO_4 (YO). — Sulphide test, – (30 sec.).	**1179**
Wool d. W (yel.) gray; wool v., OY Bkn (D). — Black paste; i. aq.; alc. filtrate (OY); s. conc. H_2SO_4 (O Bkn (D)). — Sulphide test, ±.	**1180**
Wool d., ←OY. — YOS1 paste; i. c. aq. or NaOH; alc. filtrate YO; e. s. conc. H_2SO_4 (OR and YOT2). — Sulphide test, – (20 sec.).	**1180-1**
Wool d., yel. gray (M). — Sulphide test, ±; +, after 15 sec.	**1181**
Wool d., white; wool, v., GY Bkn (M). — Black powder; i. aq.; i. alkali; i. alc.; s. conc. H_2SO_4 (YO Bkn). — Sulphide test, + (10 sec.).	**1182**
Wool d., N gray (M); wool v., G Bkn (M). — Black paste; i. aq. or alc.; s. conc. H_2SO_4 (V Bkn (D)). — Sulphide test, – (15 sec.).	**1183**
Wool d. and v., YG Bkn (M). — Black paste; i. aq. or alc.; s. conc. H_2SO_4 (violet black). — Sulphide test, – (30 sec.).	**1184**
Wool d., BG dull; wool v., ←BG. — Black paste; i. aq. or NaOH; alc. filtrate BT2+; s. conc. H_2SO_4 (BG). — Sulphide test, – (30 sec.).	**1185**
Wool d., ←GBT1 dull; wool v., GB. — Greenish-black powder; i. aq. or alc.; s. conc. H_2SO_4 (GY Bkn (M)→). — Sulphide test, – (15 sec.).	**1186**

No.	COORDINATING SEQUENCE. (1) Cotton color, vat dyed (T.6). (2) H_2SO_4 (T.13 on vat dyed cotton).	(1) Rongalite discharge on vat dyed cotton (T.11). (2) Color of hydrosulphite vat in T.6.	Trade name. Constitutional name. Date of discovery or introduction.
1187	Cotton, BS1+. H_2SO_4...(f) YS1.	(1) BVS2 dis. (2 min.). (2) Vat., B opaque.	(1) **INDANTHRENE BLUE RS** [B]. (2) " **S** [B]. Dihydroanthraquinoneazine. (Disc. 1901).
1188	Cotton, ←BS1+. H_2SO_4...(f) YS1.	Same as above.	**INDANTHRENE BLUE GCD** [B]. Formerly Indanthrene CDS [B].
1189	Cotton, BS1→. H_2SO_4...(f) YS1; (cl) YS2.	(1) BV or V, S2 dis. (2 min.). (2) Vat., VB dark.	(1) **INDANTHRENE BLUE RSP** [B]. (2) " " **RZ** [B]. (3) " " **RRZ** [B]. Formerly Indanthrene [B]; (1) for paper, (2) Z, and (3) ZR.
1190	Cotton, BV. H_2SO_4...(f) G Bkn (M).	(1) BV Bkn (M) dis. (2 min.). (2) Vat., VB dark.	**INDANTHRENE BLUE RC** [B]. Formerly Indanthrene Blue SC [B].
1191	Cotton, BV Bkn (M–D). H_2SO_4...(f) G→ Bkn (D).	(1) Black dis. (2 min.). (2) Vat., GB Bkn.	**INDANTHRENE DARK BLUE BB** Conc. [B]. Formerly Cyanthrene B double [B]. (Intro. 1904).
1192	Cotton, BVS2. H_2SO_4...(f) RVS1.	(1) RS2 dis. (4 min.). (2) Vat., ←R.	(1) **INDANTHRENE DARK BLUE B** [B]. (2) **INDANTHRENE DARK BLUE B** Conc. [B]. Formerly Violanthrene (1) B; (2) BS [B].
1193	Cotton, ←VS2. H_2SO_4...(f)←VRS1.	(1) V Bkn (D) dis. (2 min.). (2) Vat., BV dark.	(1) **INDANTHRENE VIOLET RT** [B]. (2) **VIOLANTHRENE CD Paste** (Cont.). (Violanthrene is the old, and Indanthrene the new, name).
1194	Cotton, VS1. H_2SO_4...(f) G Bkn (D).	(1) VRS3 dis. (4 min.). (2) Vat., violet.	**INDANTHRENE VIOLET R EXT.** [B]. Isoviolanthrene. —(1906).
1195	Cotton, N gray (v.D). H_2SO_4...(f) YS2.	(1) Black dis. (2 min.).	(1) **INDANTHRENE GRAY B** [B]. (2) **MELANTHRENE B Paste** (Cont.). Indanthrene Gray, the newer name. (Intro. 1904.)

Color on direct dyed wool ("Wool d.," T.5). Color on wool dyed in hydrosulphite vat ("Wool v.," T.6). Physical characteristics and solubilities (Tests 2 and 3). Sulphide test (T.4). Spectra. Names of alleged identical or closely allied dyestuffs.	No.
Wool d., BT1→ dull; wool v., BS1→. — Blue paste; i. aq. or alc.; s. conc. H_2SO_4 (OYS2→). — Sulphide test, – (15 sec.).	**1187**
Wool d., BT1 dull; wool v., BT1. — Otherwise like No. 1187 above.	**1188**
Wool d., VBT1; wool v., VB sl. dull. — Blue pastes; aq. or NaOH give colorless or v. pale blue-violet tint filtrates; alc. filtrates, (1) v. pale VR, (2,3) colorless; s. conc. H_2SO_4 (OYS2). — Sulphide test, – (15 sec.).	**1189**
Wool d., ←B Bkn (M); wool v., RVT1. — Dark blue paste; i. aq. or alc.; s. conc. H_2SO_4 (←GY Bkn (M)). — Sulphide test, –, (± 15 sec.).	**1190**
Wool d., N gray; wool v., ←R Bkn (D). — Black paste; i. aq.; alc. filtrate yellowish w. green. fluor.; s. conc. H_2SO_4 (G Bkn w. green. fluor.). — Sulphide test, –, (± 15 sec.).	**1191**
Wool d., W gray (M); wool v., ←VR Bkn (M). — Black paste; i. aq.; alc. filtrate YO Bkn (M) w. yel. fluor.; s. conc. H_2SO_4 (V Bkn w. sl. green. fluor.). —, Sulphide test, –.	**1192**
Wool d., V Bkn (D); wool v., RV–VR. — Black paste; i. aq. or alc.; s. conc. H_2SO_4 (RV→ dull). — Sulphide test, – (±, 30 sec.).	**1193**
Wool d., N gray (M); wool v., ←VRS1. — Black paste; i. aq.; alc. filtrate dull yellow w. green. fluor.; s. conc. H_2SO_4 (grayish w. yel. fluor.). — Sulphide test, ±, (+, 30 sec.).	**1194**
Wool d., W gray (M); wool v., N gray (v.D). — Black paste; i. aq. or alc.; s. conc. H_2SO_4 (Y Bkn (M)). — Sulphide test, –, (±, 30 sec.).	**1195**

GENUS V,[1] SULPHUR DYESTUFFS.

(COMPRISING DYES GIVING A STRONG POSITIVE REACTION IN TEST 6 WITH STANNOUS CHLORIDE, AND WHICH MAY BE APPLIED TO COTTON (TEST 7) FROM A SODIUM SULPHIDE BATH.)

DIVISION A. — DYES WHICH ARE DISCHARGED BY RONGALITE AND RETURNED BY AIR IN TEST 11b.

No.	The coordination sequence for this Division is: (1) sectional, according to color of the cotton dyeings obtained in a sulphide vat by the procedure of Test 7 (" Cot. S.v. "); (2) according to the color of directly dyed cotton (" Cot. d.," Test 5); (3) according to the color of direct dyed wool (" Wool d." Test 5). — Rongalite discharges on cotton dyed in sulphide vat. (" Dis."), and the corresponding color returns by air (" Ret.") are obtained by the methods of Test 11b.
	SECTION OF VIOLET-RED COLORS ON " COTTON S.v."
1215	**THIOGENE RUBINE O [M].** — Cot. S.v., VR–VRT1. — Cot. d., VRT2. — Wool d., VRT1 dull. — Dis., compl. 1½ min.; ret., abt. ½.
1216	**IMMEDIAL PURPLE C pat. [C].** — Cot. S.v., VR. — Cot. d., VRT2. — Wool d., VRT2. — Dis., compl. 1½ min.; ret., ¼.
1217	**THIOGENE DARK RED R [M].** — Cot. S.v., VR Bkn (M). — Cot. d., VB Bkn (D). — Wool d., VR Bkn (L). — Dis., ROT2 dark; ret., RV Bkn.
1218	**IMMEDIAL BROWN W Conc. pat. [C].** — Cot. S.v., VR Bkn (D). — Cot. d., W gray (D). — Wool d., VR Bkn (D). — Dis., OY Bkn (M); ret., compl.
1219	**IMMEDIAL BROWN RR pat. [C].** — Cot. S.v., VR Bkn (L). — Cot. d., W gray (D). — Wool d., OR Bkn (D). — Dis., compl.; ret., alm. compl.
1220	**KATIGENE BROWN V EXT. [By].** — Cot. S.v., R Bkn to W gray. — Cot. d., R Bkn to W gray (D). — Wool d., W gray (D). — Dis., Y Bkn (L); ret., ¾.
1221	**IMMEDIAL MAROON B Conc. pat. [C].** — Cot. S.v., VR Bkn (D). — Cot. d., besmeared. — Wool d., R–VR Bkn (L). — Dis., pale reddish gray; ret., ½.
1222	**KATIGENE RED BROWN R [By].** — Cot. S.v., VR Bkn. — Cot. d., besmeared. — Wool d., R Bkn (L). — Dis., Y Bkn (L); ret., abt. ¼.
1223	**KATIGENE RED BROWN 3R [By].** — Cot. S.v., VR Bkn (M). — Cot. d., besmeared. — Wool d., R Bkn (L) uneven. — Dis., YO Bkn (L); ret., sl. dull.
1224	**KATIGENE BROWN 2R [By].** — Cot. S.v., VR Bkn (D). — Cot. d., white. — Wool d., R Bkn (v.L). — Dis., OY Bkn (v.L); ret., W gray.
1225	**KATIGENE BROWN 4R [By].** — Cot. S.v., VR Bkn (M–L). — Cot. d., white. — Wool d., OT2. — Dis., ←OYT2; ret., ½.
1226	**SULPHUR CORINTH B [A].** — Cot. S.v., VR Bkn (D). — Cot. d., white. — Wool d., alm. white (OT4). — Dis., OYT2 dull; ret., compl.
	SECTION OF RED COLORS ON " COTTON S.v."
1227	**THIOGENE DARK RED G [M].** — Cot. S.v., R Bkn (L). — Cot. d., R Bkn (v.L) besmeared. — Wool d., R Bkn (v.L). — Dis., alm. compl.; ret., abt. ¾.

No.	The rongalite discharges and air returns recorded are for dyeings on cotton from a sodium sulphide vat. They are obtained by the procedure of Test 11b.
1228	**THIOGENE CATECHU R** [M]. — Cot. S.v., R Bkn (D). — Cot. d., alm. white. — Wool d., R Bkn (v.L). — Dis., YO Bkn (L); ret., compl.
1229	**IMMEDIAL BORDEAUX G Conc. pat.** [C]. — Cot. S.v., R Bkn (M). — Cot. d., white — Wool d., W gray (v.L). — Dis., YOT2; ret., alm. compl.
	SECTION OF ORANGE COLORS ON "COTTON S.v."
1230	**KATIGENE CATECHU B** [By]. — Cot. S.v., O Bkn (M). — Cot. d., white. — Wool d., light yellow gray. — Dis., alm. compl.; ret., duller.
1231	**KATIGENE CUTCH B** [By]. — Cot. S.v., O Bkn (D). — Cot. d., white. — Wool d., white. — Dis., alm. compl.; ret., R Bkn (L).
	SECTION OF YELLOW-ORANGE COLORS ON "COTTON S.v."
1232	**IMMEDIAL BROWN B** [C]. — Cot. S.v., YO Bkn (D). — Cot. d., ←YO Bkn (v.L). — Wool d., ←YO Bkn (L). — Dis., ⅔; ret., alm. compl.
1233	**KATIGENE BLACK BROWN B EXT.Conc.** [By]. — Cot. S.v., YO Bkn (v.D). — Cot. d., white. — Wool d., white. — Dis., ½; ret., deeper.
	SECTION OF GREEN-YELLOW COLORS ON "COTTON S.v."
1234	**IMMEDIAL OLIVE 3G** [C]. — Cot. S.v., GY Bkn (M). — Cot. d., white. — Wool d., OYT3. — Dis., OY Bkn (L); ret., alm. compl.
1235	**IMMEDIAL OLIVE GG** [C]. — Cot. S.v., GY Bkn (M). — Cot. d., white. — Wool d., alm. white. (Y Bkn (*v.L*)). — Dis., YOS1; ret., compl.
1236	**PYROL GREEN 4G** [L]. — Cot. S.v., YG–YGS1. — Cot. d., GYT1. — Wool d., YGT1. — Dis., OYT1; ret., YS1.
1237	**KATIGENE OLIVE G** [By]. — Cot. S.v., YG Bkn (D–M). — Cot. d., white. — Wool d., YGT2. — Dis., YO–OY, S1; ret., compl.
1238	**IMMEDIAL OLIVE B pat.** [C]. — Cot. S.v., YG Bkn (D). — Cot. d., white. — Wool d., alm. white. — Dis., YOS1; ret., compl.
	SECTION OF GREEN COLORS ON "COTTON S.v."
1239	**PYROL GREEN 3G** [L]. — Cot. S.v., GS1. — Cot. d., YGT1. — Wool d., GS1. — Dis., OYT1. — S. aq. (←GYS2). — S. alc. (YGS1); spectra, 8.30 (641) and 9.90 (592).
1240	**PYROGENE GREEN 3G** [J]. — Cot. S.v., G Bkn (M). — Cot. d., white. — Wool d., BGS1→. — Dis., compl., ½ min.; ret., BGT1+.
1241	**IMMEDIAL GREEN GG EXT. SOL.** [C]. — Cot. S.v., G Bkn (M+)→. — Cot. d., alm. white. — Wool d., ←BGS1. — Dis., compl., 1 min.; ret., compl.

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat (" S.v.," T.7). (2) Color of cotton directly dyed (" Cot. d.," T.5). (3) Color of wool directly dyed (" Wool d.," T.5).
1242	**KATIGENE BRILLIANT GREEN G** [By]. — Cot. S.v., G Bkn (M+). — Cot. d., white. — Wool d., G Bkn (M−). — Dis., OYT2; ret., compl.
1242-1	**IMMEDIAL DARK GREEN B** [C]. — Cot. S.v., G Bkn (M). — Cot. d., alm. white. — Wool d., pale green-gray. — Dis., OYS1; ret., compl. — S. aq. (dull yel. green) i. alc. Spectral absorption at ends only.
1243	**AURONAL GREEN TG EXT.** [t.M.] — Cot. S.v., YG Bkn (M). — Cot. d., white. — Wool d., alm. white. — Dis., OYT1; ret., compl.

SECTION OF BLUE-GREEN COLORS ON "COTTON S.v."

No.	
1244	**KATIGENE CHROME BLUE 5B** [By]. — Cot. S.v., BGS1+. — Cot. d., BG Bkn (M)+. — Wool d., BG Bkn (M) +. — Dis., compl.; ret., alm. compl.
1245	**KATIGENE GREEN 4B** [By]. — Cot. S.v., BG–BGT1 sl. dull. — Cot. d., BGT2→ –. — Wool d., BGS1. — Dis., YOT2; ret., compl. — S. aq. (BG); d. s. alc.
1246	**THIOGENE GREEN G** [M]. — Cot. S.v., BGS1. — Cot. d., BG Bkn (D). — Wool d., BGS2 dull. — Dis., YT3; ret., BG–BGS1. — S. aq. or alc., (green). — Spectrum (alc.) 8.15 (647) approx.
1247	**THIOGENE GREEN 2G** [M]. — Cot. S.v., ←BGS1. — Cot. d., BG Bkn (L), besmeared. — Wool d., ←BG Bkn (D). — Dis., ←YT2; ret., compl. — S. aq. (RV–RVS1). — S. alc. (brown). — Spectra: *8.14* (*636*), 10.05 (588) (alc.); 9.10 (614) (aq.); 9.70 (597) (aq.+KOH).
1248	**THION GREEN 2G** [K]. — Cot. S.v., BGS1. — Cot. d., GBT2. — Wool d., BGT1. — Dis., OYT3; ret., BG–B dull. — S. aq. (BG). — D. s. alc. (GY Bkn). — Spectrum (alc.) 8.47 (635) approx., v. weak.
1249	**PYROGENE DARK GREEN B** [I]. — Cot. S.v., BGS1. — Cot. d., BT3. — Wool d., B Bkn (M). — Dis., compl., ½ min.; ret., compl.
1250	**KATIGENE CHROME BLUE SG** [By]. — Cot. S.v., BG. — Cot. d., white. — Wool d., G–BG Bkn (L–M). — Dis., OYT2; ret., ½. — Sl. s. aq. (BG→); alm. i. alc.
1251	**KATIGENE GREEN BB** [By]. — Cot. S.v., BGT1. — Cot. d., white. — Wool d., BG. — Dis., OYT2; ret., compl. — S. aq. (BG). — S. alc. (BGT1→); spectrum, 7.97 (653).
1252	**KATIGENE GREEN 2BX** [By]. — Cot. S.v., BG. — Cot. d., alm. white. — Wool d., BGT1 dull. — Dis., OYT3; ret., ⅓.
1253	**KATIGENE GREEN 2G** [By]. — Cot. S.v., ←BG sl. dull. — Cot. d., BGT3. — Wool d., BG. — Dis., YOT2 –; ret., BGT1. — S. aq.; spectrum, 7.74 (661). — S. alc. (green); spectrum absorption at R. and V ends.
1254	**IMMEDIAL GREEN BB EXT.** pat. [C]. — Cot. S.v., BGT1. — Cot. d., white. — Wool d., BG. — Dis., OYT2; ret., ⅔.
1255	**IMMEDIAL GREEN BBX** pat. [C]. — Cot. S.v., ←BG sl. dull. — Cot. d., alm. white. — Wool d., BGS1. — Dis., compl., 1 min.; ret., compl.
1256	**IMMEDIAL BRILLIANT GREEN G EXT.** [C]. — Cot. S.v., ←BGT1+. — Cot. d., BGT3. — Wool d., BGT1. — Dis., YOT3; ret., ⅓. — D. s. aq. (←BG). — D. s. alc. (←BG); spectrum, 7.76 (661).
1257	**IMMEDIAL GREEN 2G EXT.** [C]. — Cot. S.v., ←BG–BGT1 sl. dull. — Cot. d., alm. white. — Wool d., BG–BGS1. — Dis., YOT2; ret., ⅔. — S. aq. or alc. (←BG). — Spectrum, (alc.) 7.86 (657).

No.	The rongalite discharges and air returns recorded are for dyeings on cotton from a sodium sulphide vat. They are obtained by the procedure of Test 11b.
1258	**IMMEDIAL GREEN GGX PAT. [C].** —Cot. S.v., BG. —Cot. d., alm. white. —Wool d., BGS1. —Dis., compl., 1 min.; ret., compl.
1259	**THIOGENE GREEN BL EXT. [M].** —Cot. S.v., BG–BGS1. —Cot. d., white. —Wool d., BG sl. dull. —Dis., OYT2 and YOT1; ret., compl. —S. aq. (BG); spectrum, 9.90 (592) approx. —S. alc. (BG); spectrum, 8.01 (652).
1260	**THIOGENE GREEN GL EXT. [M].** —Cot. S.v., BGT1+. —Cot. d., BGT3. —Wool d., BGS1. —Dis. YOT3, 1 min.; ret., ¾. —S. aq. (←BG). —S. alc. (BG); spectrum, 7.77 (662).
1261	**THIOGENE GREEN B [M].** —Cot. S.v., BGT1+ dull. —Cot., alm. white. —Wool d., BG dull. —Dis., OYT3; ret., BG–GB, T1. —S. aq. (dull green); spectrum, 9.60–10.8 (600–569). —S. alc. (BG dull); spectrum, 7.97 (653).
1262	**THIONOL GREEN 2B [Lev].** —Cot. S.v., BGS1. —Cot. d., white. —Wool d., BG Bkn (v.L). —Dis., YT2, 1 min.; ret., compl. —I. aq.; v. d. s. alc. (green).
1263	**THIONOL BRILLIANT GREEN 3G [Lev].** —Cot. S.v., ←BG. —Cot. d., BGT3. —Wool d., BGS1. —Dis., compl., ½ min.; ret., compl.
1264	**IMMEDIAL BLACK G EXT. pat. [C].** —Cot. S.v., BG Bkn (M–D); black. —Cot. d., N gray (L). —Wool d., N gray (L). —Dis., OYS2; ret., compl.
1265	**IMMEDIAL BRILLIANT BLACK B [C].** —Cot. S.v., BG Bkn (L). —Cot. d., alm. white. —Wool d., G gray (v.L). —Dis., OYS1; ret., alm. compl. —D. s. aq. (gray-blue); spectrum, 9.05 (616) approx. —I. alc.
1266	**VIDAL BLACK [P].** —Cot. S.v., BG Bkn (v.D). —Cot. d., white. —Wool d., N gray (L). —Dis., OYT2, ⅓ min., ret., alm. compl.
1267	**ST. DENIS BLACK [P].** —Cot. S.v., BGT3–gray. —Cot. d., white. —Wool d., BGT3 –. —Dis., compl., ½ min.; ret., compl.
1268	**IMMEDIAL DEEP GREEN G pat. [C].** —Cot. S.v., BGS1. —Cot. d., white. —Wool d., G gray (v.L). —Dis., compl.; ret., alm. compl. —V. d. s. aq. (green-gray). —I. alc.
1269	**KRYOGENE OLIVE B [B].** —Cot. S.v., BG Bkn (D). —Cot. d., white. —Wool d., v. pale BG Bkn Tint. —Dis., OYT3; ret., compl.
1270	**PYROL BLUE BB [L].** —Cot. S.v., BGT1. —Cot. d., alm. white. —Wool d., BGT4. —Dis., compl. ¼ min.; ret., compl.
1271	**THIONOL DARK GREEN [Lev].** —Cot. S.v., BG Bkn (D). —Cot. d., white. —Wool d., alm. white–N gray (v.L). —Dis., OYT2 dull, ⅓ min.; ret., alm. compl.
1272	**THIONOL GREEN 3B [Lev].** —Cot. S.v., BG→ dull. —Cot. d., white. —Wool d., alm. white. (v. pale green-gray). —Dis., compl., ⅓ min.; ret., compl. —Alm. i. aq. or alc.
	SECTION OF GREEN-BLUE COLORS ON "COTTON S.v."
1274	**IMMEDIAL BLACK FF EXT. pat. [C].** —Cot. S.v., GB Bkn (D); black. —Cot. d., white. —Wool d., BG Bkn (v.L). —Dis., OYS1; ret., compl.
1275	**KRYOGENE DIRECT BLUE G [B].** —Cot. S.v., GB dull. —Cot. d., alm. white. —Wool d., GB Bkn (M–D). —Dis., YT2; ret., BG–GB, T1 dull.

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat (“ S.v.,” T.7). (2) Color of cotton directly dyed (“ Cot. d.,” T.5). (3) Color of wool directly dyed (“ Wool d.,” T.5).
1276	**IMMEDIAL INDONE 3B Conc. pat. [C].** — Cot. S.v., BGT1→. — Cot. d., white. — Wool d., GB–B, T2–3. — Dis., compl., ½ min.; ret., compl. — S. aq. (VT1). — S. alc. (B); spectrum, *9.45* (604), 11.20 (560).
1277	**IMMEDIAL INDONE BBF Conc. [C].** — Cot. S.v., GB→. — Cot. d., white. — Wool BT2. — Dis., compl., 1 min.; ret., alm. compl. — D. s. aq. (dull blue). — D. s. alc. (violet-blue); spectrum, 11.10 (562) and 9.35 (607).
1278	**KATIGENE INDIGO G EXT. [By].** — Cot. S.v., GB+. — Cot. d., alm. white. — Wool d., BT1 dull. — Dis., YT3; ret., BT1→. — S. aq. (BT1). — S. alc. (GBT1); spectrum, *9.30* (608), 11.15 (561) approx.
1279	**IMMEDIAL NEW BLUE G Conc. pat. [C].** — Cot. S.v., GBS1. — Cot. d., white. — Wool d., alm. N gray (L). — Dis., YT2; ret., compl. — S. aq. (BS1); spectrum, 9.20 (611), 10.70 (572), approx. — Alm. i. alc.
	SECTION OF BLUE COLORS ON “ COTTON S.v.”
1280	**IMMEDIAL BLACK V EXT. [C].** — Cot. S.v., B Bkn. (L) and blue-black. — Cot. d., C–N gray (M). — Wool d., G gray (L). — Dis., OYS1; ret., alm. compl.
1281	**PYROGENE INDIGO [Klp].** — Cot. S.v., BT2+. — Cot. d., white. — Wool d., BGT3. — Dis., compl., ½ min.; ret., GBT1. — S. aq. (dull GB). — S. alc. (BT1); spectrum, 9.50 (603) approx., v. faint.
1282	**IMMEDIAL INDONE JBN Conc. [C].** — Cot. S.v., BT1. — Cot. d., white. — Wool d., GBT2. — Dis., compl., 1 min.; ret., compl.
1283	**THIOGENE CYANINE G [M].** — Cot. S.v., ←BT1 sl. dull. — Cot. d., white. — Wool d., GBT2. — Dis., compl., ½ min.; ret., compl., rapid. — S. aq. (GB→); spectrum, *8.60* (*631*); 10.28 (582). — S. alc. (VB); spectrum, *9.45* (*604*), 11.15 (561); + HNO_3 (BV), 8.70 (627) and 10.40 (579).
1284	**THIOGENE CYANINE O [M].** — Cot. S.v., B–GB, T1. — Cot. d., B–VB, T2. — Wool d., GBT1→ sl. dull. — Dis., compl., ½ min.; ret., compl. — S. aq. (←B); spectrum, *8.59* (613), 10.30 (582). — S. alc.; spectrum, *9.40* (605), 11.15 (561) approx.
1285	**AURONAL BLUE 2B EXT. [t.M].** — Cot. S.v., BT1. — Cot. d., alm. white. — Wool d., BT1–2 dull. — Dis., compl., 1 min.; ret., compl.
1285-1	**IMMEDIAL BLUE C [C].** — Cot. S.v., B Bkn (D). — Cot. d., white. — Wool d., B Bkn (v.L). — Dis., YT2; ret., compl. — S. aq. (blue). — I alc.
1286	**IMMEDIAL INDOGENE GCK Conc. pat. [C].** — Cot. S.v., BT1 sl. dull. — Cot. d., C gray (L). — Wool d., B–BT1. — Dis., YT3; ret., compl.
1286-1	**IMMEDIAL INDOGENE GCL Conc. sol. [C].** — Cot. S.v., BT1. — Cot. d., white. — Wool d., ←BT2 –. — Dis. compl., 45 sec.; ret., compl.
1287	**IMMEDIAL INDONE B Conc. [C].** — Cot. S.v., BT1 – dull. — Cot. d., white. — Wool d., BT2. — Dis., compl., ½ min.; ret., compl.
1288	**IMMEDIAL INDONE BN Conc. [C].** — Cot. S.v., BT1 – dull. — Cot. d., white. — Wool d., BT2. — Dis., compl.; ret., compl. — S. aq. (←BG); spectrum, 8.85 (622). — S. aq., spectrum, *9.37* (606); 11.03 (564).
1289	**IMMEDIAL INDONE BF Conc. [C].** — Cot. S.v., BT1 – dull. — Cot. d., white. — Wool d., BT2. — Dis., compl., ½ min.; ret., compl. — S. aq. (GBS1); spectrum, 9.68 (598), approx. — S. alc. (B), *9.45* (604), 11.15 (561), faint.
1290	(1) **IMMEDIAL SKY BLUE PASTE pat. [C]**, (2) **IMMEDIAL SKY BLUE POWDER Conc. [C].** — Cot. S.v., B Bkn (M +). — Cot. d., B Bkn (M +) uneven. — Wool d., BT1 + sl. dull. — Dis. compl., ½ min.; ret., compl. — (2) S. aq. (BT1); spectrum, *867* (*628*), 10.35 (581). — S. alc. (BT1); spectrum, 9.22 (611), approx.

whose colors are discharged by rongalite and restored by air in Test 11b.

No.	The rongalite discharges and air returns recorded are for dyeings on cotton from a sodium sulphide vat. They are obtained by the procedure of Test 11b.
1291	**KATIGENE INDIGO CL EXT. [By].** — Cot. S.v., BT1 dull. — Cot. d., white. — Wool d., BT2. — Dis., YT3, 1 min.; ret., ½. — S. aq. (B); spectrum, *878* (625), 12.15 (540). — S. alc. (BT1→); spectrum, *9.48* (*605*), 11.15 (561) approx.; + HNO_3, 8.76 (625), 10.46 (578), 12.38 (536).
1292	**KATIGENE INDIGO 2RL EXT. [By].** — Cot. S.v., BT1. — Cot. d., alm. white. — Wool d., BT2+ sl. dull. — Dis., alm., compl., 1 min.; ret., alm. compl.
1293	**PYROL BLUE R Conc. [L].** — Cot. S.v., BS1→. — Cot. d., white. — Wool d., BT3. — Dis., YT3; ret., alm. compl. — S. aq. (blue-gray); spectrum, 9.45 (604). — S. alc., spectrum, *9.60* (600), 11.40 (556); + HNO_3, 10.10 (587) and 11.90 (545).
1294	**THIONOL BLUE BW (Lev.).** — Cot. S.v., BS1 duller. — Cot. d., alm. white. — Wool d., BT1→ sl. uneven. — Dis., compl., ⅓ min.; ret., compl. — S. aq. (BT1); spectrum, *9.40* (605), 10.95 (544); + HNO_3 (RT2), 9.80 (595) and 11.80 (547). — S. alc. (BT1→); spectrum, *9.48* (605), 11.10 (562) approx.
1295	**THIOXINE INDIGO [O].** — Cot. S.v., BT1 sl. dull. — Cot. d., white. — Wool d., BVT2. — Dis., compl., ½ min.; ret., compl.
1296	**THIOXINE DARK BLUE B [O].** — Cot. S.v., BT1 sl. dull. — Cot. d., white. —Wool VB Bkn. — Dis., compl., ½ min.; ret., compl.
1297	**PYROGENE INDIGO R [J].** — Cot. S.v., B–VB, T1 dull. — Cot. d., white. —Wool d., BVT2+. — Dis., alm. compl.; ret., ½. — S. aq. (BV); spectrum, *9.65* (598), 11.32 (556) approx. — S. alc. (VT1); spectrum, 9.72 (597), 11.42 (556); + HNO_3 (VRT1), 10.35 (581) and 12.15 (540).
1298	**PYROL BLUE RR Conc. [L].** — Cot. S.v., BT1→ sl. dull. — Cot. d., white. — Wool, d., BVT3. — Dis., YT3; ret., compl. — D. s. aq. (VB); spectrum, 9.60 (600). D. s. alc. (VT1); spectrum, *9.70* (*598*), 11.38 (556).
1299	**KATIGENE BLACK 2B [By].** — Cot. S.v., B Bkn (v.D). — Cot. d., C gray (L). — Wool d., C gray (M). — Dis., OYT2+ dark; ret., compl.
1300	**KATIGENE CHROME BLUE 2R [By].** — Cot. S.v., B Bkn (M). — Cot. d., C gray (L) uneven. — Wool d., C gray (L). — Dis., compl., ⅓ min.; ret., BS1.
1301	(1) **KATIGENE BLUE-BLACK 4B [By]**, (2) **KATIGENE BLUE-BLACK R [By].** — Cot. S.v., (1) B Bkn (D), (2) B Bkn (D)→, and blue-black. —Cot. d., N gray (L). — Wool, N gray (D). — Dis., OY Bkn (L); ret., compl.
1302	**SULPHUR INDIGO B [A].** — Cot. S.v., B Bkn (M)+. — Cot. d., white. — Wool d., GBT3. — Dis., YT2; ret., alm. compl. — S. aq. (BS1); spectrum, 10.20–11.75 (584–548) approx. and 9.35 (607) approx.
1303	**SULPHUR INDIGO BA EXT. [A].** — Cot. S.v., BT1 dull. — Cot. d., white. — Wool d., C gray (v.L). — Dis., YT2; ret., compl.
1304	**THIOGENE MARINE BLUE R Conc. [M].** — Cot. S.v., B Bkn (D). — Cot. d., white. — Wool d., C gray (L). — Dis., compl., ⅓ min.; ret., alm. compl. — D. s. aq. (green-gray). — S. alc. (VT1→); spectrum, *9.60* (*600*), 11.50 (554); + HNO_3 (←VRT1), 10.05 (588) and 11.85 (546), approx.
1305	**THIOGENE DARK BLUE B [M].** — Cot. S.v., B Bkn (D)→. — Cot. d., alm. white. — Wool d., alm. white. — Dis., OYT3; ret., ⅔. — S. aq. (BVS2); spectrum, 9.68 (598). S. alc. (GBS1); spectrum, *9.70* (*597*), 11.40 (556) approx.
1306	**THIOGENE DARK BLUE BTL [M].** — Cot. S.v., B–BV Bkn (v.D). — Cot. d., white. — Wool d., white. — Dis., OYT2; ret., compl. — S. aq. (VBS2); spectrum, 12.20 (539) approx.
1307	**KATIGENE BRILLIANT BLACK B EXT. [By].** — Cot. S.v., black and gray–B Bkn (L). — Cot. d., white. — Wool d., alm. white. — Dis., OYS1; ret., compl. — I. aq. or alc.
1308	**KATIGENE BLUE-BLACK G [By].** — Cot. S.v., B Bkn (L) and blue-black. — Cot. d., white. — Wool d., white. — Dis., OYS1; ret., greener.

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat ("Cot. S.v.," T.7). (2) Color of cotton directly dyed ("Cot. d.," T.5). (3) Color of wool directly dyed ("Wool d.," T.5).
1309	**KATIGENE BLUE-BLACK NB EXT.** [By]. — Cot. S.v., B→ Bkn (L) and blue-black. — Cot. d., white. — Wool d., white. — Dis., OYS1; ret., alm. compl. — I. aq. or alc.
1310	**KATIGENE NAVY BLUE R EXT.** [By]. — Cot. S.v., B Bkn (D)→. — Cot. d., white. — Wool d., white. — Dis., compl.; ret., alm. compl.
1311	**SULPHUR BLUE L EXT.** [A]. — Cot. S.v., B Bkn (D). — Cot. d., white. — Wool d., alm. white. — Dis., compl., 1 min; ret., compl.
1312	**THIONOL BLUE 2B** [Lev]. — Cot. S.v., BS2. — Cot. d., white. — Wool d., white. — Dis., compl., ⅓ min.; ret., alm. compl. — D. s. alc. (VT1→); spectrum, 9.70 (597) approx.; + NH_3, 9.60 (600).
1313	**THION BLUE-BLACK B** [K]. — Cot. S.v., B Bkn (L) and blue-black. — Cot. d., alm. white. — Wool d., C gray (L). — Dis., OYS1; ret., ⅔.
	SECTION OF VIOLET-BLUE COLORS ON "COTTON S.v."
1314	**THIOGENE BLACK 6BV Liquid** [M]. — Cot. S.v., VB Bkn (D) and black. — Cot. d., C–G gray (D). — Wool d., G–N gray (D). — Dis., YS2; ret., compl.
1315	**THIOGENE BLUE B** [M]. — Cot. S.v., ←VBS1. — Cot. d., GBT3→ +. — Wool d., BVT2. — Dis., YT2; ret., compl. — S. aq. (VB); spectrum, 9.60 (600). — S. alc. (R→); spectrum, 9.84 (594), 11.61 (551) approx.
1316	**THIOGENE BLUE 2R** [M]. — Cot. S.v., VBT1 + sl. dull. — Cot. d., BT4. — Wool d., VBT2. — Dis., compl., 1 min.; ret., compl. — S. aq. (VB); spectrum, 9.48 (603) approx. — S. alc. (VBT1); spectrum, *9.65* (*598*), 11.40 (556).
1317	**IMMEDIAL DIRECT BLUE R** pat. [C]. — Cot. S.v., VBS2. — Cot. d., C gray (L). — Wool d., C gray (L). — Dis., alm. compl.; ret., ½.
1318	**IMMEDIAL DIRECT BLUE B EXT.** Conc. [C]. — Cot. S.v., VB Bkn (D). — Cot. d., B Bkn (L)–pale C gray. — Wool d., B Bkn (L). — Dis., OY–Y, T2; ret., compl. — Spectrum, –.
1319	**IMMEDIAL INDONE R** Conc. pat. [C]. — Cot. S.v., VBS1. — Cot. d., white. — Wool d., B Bkn (v.L). — Dis., YT2; ret., alm. compl. — S. aq. (B Bkn). — S. alc. (V→); spectrum, 9.68 (598), 11.47 (554); + HNO_3, (←VRT1), 11.85 (546), 10.08 (587).
1320	**IMMEDIAL INDONE RR** Conc. pat. [C]. — Cot. S.v., VBS1→. — Cot. d., alm. white. — Wool d., VBT3–. — Dis., YT3; ret., compl. — S. aq. (B); spectrum, 9.62 (599). — S. alc. (VRT1→); spectrum, 9.68 (598), 11.45 (555); + HNO_3 (VRT1), 10.05 (563) and 11.85 (546), weak bands.
1321	**IMMEDIAL INDONE RG** [C]. — Cot. S.v., VBS1. — Cot. d., white. — Wool d., VB Bkn (M). — Dis., YT2 –, 1 min.; ret., alm. compl. — S. aq. (BT1); spectrum, 9.63 (599). — S. alc. (VBT1); spectrum, *9.70* (597), 11.40 (556) approx.; + HNO_3 (RVT1), 2 weak bands.
1322	**IMMEDIAL INDONE RB** Conc. [C]. — Cot. S.v., VBS2. — Cot. d., alm. white. — Wool d., BVT2. — Dis., compl., 1 min.; ret., compl.
1323	**IMMEDIAL DIRECT BLUE JB** pat. [C]. — Cot. S.v., VBS2 –. — Cot. d., alm. white. — Wool d., BV Bkn (L). — Dis., compl., 1½ min.; ret., compl.
1324	**KRYOGENE DIRECT BLUE B** [B]. — Cot. S.v., VB Bkn (M). — Cot. d., alm. white. — Wool d., BV Bkn (L)→. — Dis., compl., ½ min.; ret., compl. — S. aq. (d. blue); spectrum, 9.70 (597), weak. — S. alc. (– VR bril.); spectrum, 11.60 (551) approx.

No.	The rongalite discharges and air returns recorded are for dyeings on cotton from a sodium sulphide vat. They are obtained by the procedure of Test 11b.
1325	**KATIGENE INDIGO 4RO EXT. [By].** — Cot. S.v., VBS2. — Cot. d., white. — Wool d., BV Bkn (L). — Dis., YT2 –, 1½ min.; ret., ¾. — S. aq. (RVS1); spectrum, 9.39 (606) approx. — S. alc. (BT2); spectrum, 9.38 (606).
1326	**KATIGENE DARK BLUE R EXT. [By].** — Cot. S.v., VBS2 duller. — Cot. d., white. — Wool d., VT2. — Dis., YT2; ret., compl. — S. aq. (BV→); spectrum, 9.55 (601). — S. alc. (RV); spectrum, 9.50 (603) and 12.43 (535), weak.
1327	**KATIGENE DIRECT BLUE B pat. [C].** — Cot. S.v., VBS2. — Cot. d., alm. white. — Wool d., VT3. — Dis., compl.; ret., compl.
1328	**IMMEDIAL DIRECT BLUE OD [C].** — Cot. S.v., (VB–BV) S2 and VBT1 dull. — Cot. d., white. — Wool d., V Bkn (L). — Dis., YT3; ret., ½. — S. aq. (VS1); spectrum, –.
1329	**IMMEDIAL BLUE CR EXT. Conc. pat. [C].** — Cot. S.v., VB Bkn (v.D.). — Cot. d., alm. white. — Wool d., alm. white. — Dis., ←YT1; ret., compl. — S. aq. (BVS2); spectrum, –.
1330	**IMMEDIAL DIRECT BLUE B EXT. Conc. pat. [C].** — Cot. S.v., VBS2 duller. — Cot. d., white. — Wool d., white. — Dis., OYT2; ret., compl. — S. aq. (BV); spectrum, –.
1331	**IMMEDIAL DIRECT BLUE 4B EXT. Conc. pat. [C].** — Cot. S.v., VB Bkn (v.D). — Cot. d., white. — Wool d., alm. white. — Dis., YT2; ret., VB Bkn (D).
1333	**KATIGENE INDIGO CLG EXT. [By].** — Cot. S.v., ←VBS1. — Cot. d., white. — Wool d., white. — Dis., compl., 1 min.; ret., compl. — V. sl. s. alc.; i. aq.
1334	**KATIGENE INDIGO 5RL EXT. [By].** — Cot. S.v., VBT2 sl. dull. — Cot. d., white. — Wool d., white. — Dis., alm. compl., 1 min.; ret., alm. compl. — V. sl. s. aq.; i. alc.
1335	**THIOGENE BLUE R [M].** — Cot. S.v., VBS1 dull. — Cot. d., white. — Wool d., BT4. — Dis., compl.; ret., alm. compl. — S. aq. (VB); spectrum, 9.65 (598). — S. alc. (VT1 –); spectrum, *9.81* (*594*), 11.48 (554); + HNO_3 (RVT1), 10.23 (584), 11.95 (544).
	SECTION OF BLUE-VIOLET COLORS ON "COTTON S.v."
1336	**KATIGENE BLUE B [By].** — Cot. S.v., BVS2 dull. — Cot. d., VRT2. — Wool d., RV Bkn (L). — Dis., OYS1 –; ret., abt. ½. — S. aq. (RT2). — S. alc. (RT1 w. green. fluor.); spectrum, 12.35 (536) approx.
1337	**IMMEDIAL INDOGENE B Conc. [C].** — Cot. S.v., BVS2 duller. — Cot. d., VT3 +. — Wool d., alm. white. — Dis., YT2–1; ret., compl. — S. aq. (VB); spectrum, –. — I. alc.
1338	**KRYOGENE BLUE R [B].** — Cot. S.v., BV Bkn (D). — Cot. d., white. — Wool d., V Bkn (D). — Dis., BGT1; ret., B Bkn (M).
1339	**KATIGENE BLUE-BLACK B EXT. [By].** — Cot. S.v., BV Bkn (L). — Cot. d., white. — Wool d., yellow-gray. — Dis., ←Y Bkn (L); ret., alm. compl. — I. aq.
1340	**PYROGENE DIRECT BLUE RS [I].** — Cot. S.v., BV Bkn (M). — Cot. d., white. — Wool d., alm. white. — Dis., compl., 40 sec.; ret., compl.
1341	**THION BLACK TC [K].** — Cot. S.v., ←BV Bkn (L) and black. — Cot. d., white. — Wool d., white. — Dis., OYS1; ret., ½. — I. aq. or alc.
1342	**THION BLACK TR [K].** — Cot. S.v., V Bkn (D) and BV Bkn (D)–black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS1; ret., ½. — I. aq. or alc.

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat (" Cot. S.v.," T.7). (2) Color of cotton directly dyed (" Cot. d.," T.5). (3) Color of wool directly dyed (" Wool, d.," T.5).
	SECTION OF RED-VIOLET COLORS ON " COTTON S.v."
1343	**IMMEDIAL VIOLET C [C].** — Cot. S.v., RV. — Cot. d., RVT3. — Wool d., VR. — Dis., compl., 1 min.; ret., compl.
1344	**IMMEDIAL PRUNE S [C].** — Cot. S.v., RV Bkn (M). — Cot. d., RV Bkn (D). — Wool d., B Bkn (M). — Dis., YO Bkn (L); ret., compl.
1345	**KATIGENE VIOLET B [By].** — Cot. S.v., RV Bkn (M) +. — Cot. d., RV Bkn (L) uneven. — Wool d., RV Bkn (D). — Dis., YT3; ret. ½. — S. aq. (VRS1); d. s. alc. (←VRT1); spectrum, —.
1346	**THIOGENE VIOLET V [M].** — Cot. S.v., RV. — Cot. d., alm. white, (VRT4). —Wool d., VRT2. — Dis., compl., 1 min.; ret., alm. compl. — S. aq. (VRT1); spectrum absorption in green. — S. alc. (bril. red); spectrum, 12.22 (539) and 14.20 (504), approx.
1347	**ECLIPSE VIOLET R EXT. [G].** — Cot. S.v., RV Bkn (M). — Cot. d., alm. white (ROT3–4). — Wool d., RT3. — Dis., RV Bkn (v.L); ret., compl. — I. aq. — S. alc. (blue-red w. fluor.); spectrum, 15.10 (491), 12.95 (525), 10.94 (566); + NH_3, band at 11.53 (553).
1350	**THIOGENE HELIOTROPE O [M].** — Cot. S.v., RVT2. — Cot. d., alm. white. — Wool RVT2→. — Dis., compl. in ¼ min.; ret., compl. — S. aq. (VRS1); spectrum absorption at abt. 15.50 (486). — D. s. alc. (VRT2).
1351	**THIONOL DARK PURPLE [Lev].** — Cot. S.v., RV Bkn (M). — Cot. d., white. — Wool d., white. — Dis., compl., ¾ min.; ret., V. — I. aq. or alc.
	SECTION OF GRAY COLORS ON " COTTON S.v."
1352	**THIOGENE BLACK M Liquid [M].** — Cot. S.v., N–G gray (D). — Wool d., BG Bkn (M). — Dis., YT2 dull, 1½ min.; ret., BG Bkn (D)–black. — Black paste; aq. and NaOH filtrates, clear dark green.
1353	**IMMEDIAL CARBON BL [C].** — Cot. S.v., N gray (D) and black. — Cot. d., white. — Wool d., N gray (v.L). — Dis., OYS3; ret., alm. compl. — D. s. aq. (B Bkn); i. alc.; spectrum, —.
1354	**AURONAL BLACK PASTE 3G EXT. [t.M].** — Cot. S.v., N gray (D); black. — Cot. d., besmeared. — Wool d., N gray (L). — Dis., OYS2; ret., compl.
1355	**AURONAL BLACK PASTE N5G EXT. [t.M].** — Cot. S.v., N gray (D); black. — Cot. d., N gray besmeared. — Wool d., N gray. — Dis., OYT1; ret., compl.
1356	**KATIGENE BLACK BFC EXT. [By].** — Cot. S.v., N gray (D); black. — Cot. d., — Wool d., alm. white. — Dis., OYS1; ret., C gray.
1357	**AUTOGENE BLUE BEE [SS].** — Cot. S.v., N gray; black. — Cot. d., white. — Wool d., alm. white. — Dis., compl., ½ min.; ret., B Bkn (L)–C gray (L).
1358	**THIOGENE BLACK 4B Liquid.** — Cot. S.v., N gray (D) and black. — Cot. d., N gray (D) and black. — Wool d., G gray (L). — Dis., Y Bkn (L); ret., compl. — Odor faint, peculiar, pyridine-like.
1359	**CLAYTON FAST BLACK [ClCo].** — Cot. S.v., N–C gray (D). — Cot. d., white. — Wool d., G gray (L). — Dis., YO Bkn (L); ret., alm. compl.
1360	**THIOGENE BROWN GR [M].** — Cot. S.v., N gray (D). — Cot. d., C gray (L). — Wool d., G gray (v.L). — Dis., ←YT2; ret., alm. compl.

whose colors are discharged by rongalite and restored by air in Test 11b.

No.	The rongalite discharges and air returns recorded are for dyeings on cotton from a sodium sulphide. They are vat obtained by the procedure of Test 11b.
1361	**THIOPHENOL BLACK T EXT. [Klp].** — Cot. S.v., N gray (D); black. — Cot. d., alm. white. — Wool d., alm. white. — Dis., OYS1; ret., compl.
1362	**IMMEDIAL BLACK NBB Conc. pat. [C].** — Cot. S.v., C gray (M); black. — Cot. d., white. — Wool d., C gray (L). — Dis., OYS1; ret., compl.
1363	**KATIGENE BLACK 2R EXT. [By].** — Cot. S.v., N gray (D)–black. — Cot. d., white. — Wool d., violet-gray (v.L). — Dis., compl., 1 min.; ret., compl.
1364	**KATIGENE DEEP BLACK B [By].** — Cot. S.v., N gray–black. — Cot. d., white. — Wool d., white. — Dis., YT2; ret., alm. compl.
1365	**KRYOGENE BLACK TB [B].** — Cot. S.v., N gray (v.D). — Cot. d., white. — Wool d., white. — Dis., OYT2; ret., BG Bkn (D).
1366	**THIONOL BLACK A Conc. [SS].** — Cot. S.v., W gray. — Cot. d., white. — Wool d., C gray (L). — Dis., compl., ⅓ min.; ret., BV Bkn (L)–C gray (L).
1367	**IMMEDIAL DARK BROWN A pat. [C].** — Cot. S.v., O Bkn (L). — Cot. d., white. — Wool d., pale dull yellowish gray. — Dis., ⅔; ret., compl.
1368	**IMMEDIAL CARBON JHJ [C].** — Cot. S.v., W–N gray (D). — Cot. d., white. — Wool d., white. — Dis., OYS1; ret., compl.
1369	**SULPHUR BLACK T EXT. [A].** — Cot. S.v., W–N gray (D). — Cot. d., white. — Wool d., white. — Dis., OYS1; ret., compl.
1370	**AUTOGENE GRAY [GRIS AUTOGEN] [P].** — Cot. S.v., C gray (D). — Cot. d., W. gray (L). — Wool d., C gray (L). — Dis., GY Bkn, ⅓ min.; ret., C gray (D).
1371	**KATIGENE BLUE-BLACK B [By].** — Cot. S.v., C gray and black. — Cot. d., C gray. — Wool d., C gray (L). — Dis., OYS1; ret., alm. compl.
1372	**IMMEDIAL BRILLIANT BLACK 5BV Conc. pat. [C].** — Cot. S.v., C gray (M) and black. — Cot. d., white. — Wool d., C–G gray (v.L). — Dis., compl., ⅓ min.; ret., B Bkn (M).
1373	**IMMEDIAL BRILLIANT BLACK 6BG Conc. [C].** — Cot. S.v., C gray (D) and black. — Cot. d., white. — Wool d., C gray (v.L). — Dis., OYS1; ret., compl.
1375	**THIONOL BLACK R Conc. [Lev].** — Cot. S.v., C gray (M); black. — Cot. d., white. — Wool d., N gray (L). — Dis., OYS2; ret., compl.
1376	**THIONOL BLACK B Conc. [Lev].** — Cot. S.v., C gray (D); black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS2; ret., compl.
1377	**AURONAL BLACK 4G EXT. [t.M].** — Cot. S.v., C gray (M) and black. — Cot. d., white. — Wool d., alm. white. — Dis., OYT2; ret., compl.
1378	**IMMEDIAL BLACK NNZ Conc. [C].** — Cot. S.v., C gray (M); black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS1; ret., compl.
1379	**IMMEDIAL BLACK NNG Conc. pat. [C].** — Cot. S.v., C gray (M); black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS1; ret., compl.
1380	**IMMEDIAL CARBON B [C].** — Cot. S.v., B gray (D) and black. — Cot. d., white. — Wool d., white. — Dis., OYS2; ret., abt. ½. — S. aq. (GBT2); spectrum, –. — I. alc.
1381	**IMMEDIAL BRILLIANT CARBON F pat. [C].** — Cot. S.v., C gray (M). — Cot. d., white. — Wool d., alm. white. — Dis., OYS2; ret., compl.
1382	**IMMEDIAL BRILLIANT CARBON FG pat. [C].** — Cot. S.v., C gray (M); black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS2; ret., compl.
1383	**KATIGENE BLACK TG EXT. [By].** — Cot. S.v., C gray (D) and black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS1; ret., greener.

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat (" Cot. S.v.," T.7). (2) Color of cotton directly dyed (" Cot. d.," T.5). (3) Color of wool directly dyed (" Wool d.," T.5).
1384	**PYROGENE BLUE R [I].** — Cot. S.v., B gray (D). — Cot. d., white. — Wool d., C gray (v.L). — Dis., compl., 1½ min.; ret., compl.
1385	**SULPHON BLACK A EXT. [A].** — Cot. S.v., C gray (D); black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS1; ret., compl.
1386	**SULPHUR BLACK 2B EXT. [A].** — Cot. S.v., C gray (D); black. — Dis., OYS2; ret., compl.
1387	**IMMEDIAL BLACK NN Conc. [C].** — Cot. S.v., gray, sl. violet. — Cot. d., white. — Wool d., W gray (L). — Dis., OYS1; ret., bluer.
1388	**IMMEDIAL BLACK NNR Conc. [C].** — Cot. S.v., V gray (L); black. — Cot. d., alm. white. — Wool d., W gray (L). — Dis., OYS1; ret., abt. ½.
1389	**AURONAL BLACK N EXT. [t.M].** — Cot. S.v., V gray (D) and black. — Cot. d., white. — Wool d., alm. white. — Dis., OYS2; ret., compl.
1390	**IMMEDIAL CARBON R [C].** — Cot. S.v., gray, sl. violet. — Cot. d., white. — Wool d., white. — Dis., OYT1 dull; ret., bluish, and then original color.
1391	**KATIGENE BLACK T EXT. Conc. [By].** — Cot. S.v., V gray and black. — Cot. d., white. — Wool d., white. — Dis., OYT2–YT2; ret., abt. ½.
1392	**NOIR AUTOGEN [P].** — Cot. S.v., C gray (M). — Cot. d., C–N gray (L). — Wool d., V Bkn (M). — Dis., Y Bkn (L); ret., compl.
1393	**IMMEDIAL BRILLIANT BLACK 8BG Conc. [C].** — Cot. S.v., G–C gray (M); black. — Cot. d., white. — Wool d., N gray (L). — Dis., OYS1.

GENUS V, SULPHUR DYESTUFFS

(COMPRISING DYES GIVING A STRONG POSITIVE REACTION IN TEST 4 WITH STANNOUS CHLORIDE, AND WHICH MAY BE APPLIED TO COTTON (TEST 7) FROM A SODIUM SULPHIDE BATH.)

DIVISION B.—DYES WHICH ARE NOT DISCHARGED OR, IN GENERAL, NOTICEABLY CHANGED BY RONGALITE IN TEST 11b.

No.	The coordination sequence for this Division is: (1) sectional, according to color of the cotton dyeings obtained in a sulphide vat (" Cot. S.v."); (2) according to color of directly dyed cotton (" Cot. d." Test 5); (3) according to the color of directly dyed wool (" Wool d." Test 5).
	SECTION OF ORANGE-RED COLORS ON " COTTON S.v."
1394	**IMMEDIAL BROWN BR [C].** —Cot. S.v., OR Bkn (D). —Cot. d., white. —Wool d., O Bkn (L).
	SECTION OF ORANGE COLORS ON " COTTON S.v."
1395	**SULPHUR CATECHU R [A].** —Cot. S.v., O Bkn (M–D). —Cot. d., YO Bkn (L). —Wool d., YO Bkn (v.L).
1396	**IMMEDIAL CUTCH BG pat. [C].** —Cot. S.v., O Bkn (M–D). —Cot. d., white. —Wool d., O Bkn (L).
1397	**IMMEDIAL CUTCH BGG pat. [C].** —Cot. S.v., O–YO Bkn (D). —Cot. d., alm. white. —Wool d., O Bkn (L).
1398	**THION BROWN 3R [K].** —Cot. S.v., O Bkn (D)→. —Cot. d., white. —Wool d., YOT3 +.
1399	**PYROL BROWN R Conc. [L].** —Cot. S.v., O Bkn (D). —Cot. d., white. —Wool d., alm. white.
	SECTION OF YELLOW-ORANGE COLORS ON " COTTON S.v."
1400	**THIOGENE BROWN G2R [M].** —Cot. S.v., YO Bkn (M). —Cot. d., O Bkn (D). —Wool YO Bkn (D).
1401	**CROSS DYE BROWN 4R [H].** —Cot. S.v., YOS2. —Cot. d., O Bkn (D). —Wool d., YO Bkn (L).
1402	**AUTOGENE BROWN G [SS].** —Cot. S.v., YO Bkn (L). —Cot. d., ←YO Bkn (M). —Wool d., YO Bkn (L).
1403	**IMMEDIAL CUTCH O pat. [C].** —Cot. S.v., YOS2 +. —Cot. d., YO Bkn (L) uneven. —Wool d., YO Bkn (M).

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat ("Cot. S.v.," T.7).
1404	**KATIGENE YELLOW-BROWN GR EXT. [By].** — Cot. S.v., YOS1-2. — Cot. d., YO Bkn uneven. — Wool d., YO Bkn (M).
1405	**PYROGENE BROWN G [I].** — Cot. S.v., YO Bkn (D). — Cot. d., ←YO Bkn (M). — Wool ←YO Bkn (M).
1407	**THIO CATECHINE [P].** — Cot. S.v., YOS2. — Cot. d., YO Bkn (M–D). — Wool d., YO Bkn (M).
1408	**THIO CATECHINE NO. 1 [SS].** — Cot. S.v., YOS1. — Cot. d., YO Bkn (L). — Wool d., YO Bkn (v.L).
1409	**SULPHUR CATECHU G [A].** — Cot. S.v., YO Bkn (M). — Cot. d., YO Bkn (L). — Wool d., YO Bkn (L).
1410	**THIONOL BROWN R [Lev].** — Cot. S.v., YO Bkn (M–D). — Cot. d., YO Bkn (M–L). — Wool d., YO Bkn (L).
1411	**THIOGENE BROWN-YELLOW SHADE OG Conc. [M].** — Cot. S.v., YO Bkn (D). — Cot. d., YO Bkn (L). — Wool d., YO Bkn (D).
1412	**THIOGENE GOLD-BROWN OG Conc. [M].** — Cot. S.v., YO Bkn (D). — Cot. d., YO Bkn (L). — Wool d., YO Bkn (L).
1413	**KATIGENE BLACK-BROWN BW EXT. Conc. [By].** — Cot. S.v., YO Bkn (v.D). — Cot. d., YO Bkn (v.D)–W gray (D). — Wool d., orange-gray (L).
1414	**THIOGENE BROWN G [M].** — Cot. S.v., YO Bkn (M). — Cot. d., OYT2 + dull. — Wool d., OYT2 + dull.
1415	**THIOXINE BROWN GR [O].** — Cot. S.v., YO→ Bkn (M). — Cot. d., OY Bkn (L). — Wool d., OYS2.
1416	**THIOGENE BROWN 2R [M].** — Cot. S.v., YO Bkn (D). — Cot. d., orange-gray (L). — Wool d., O Bkn (v.L).
1417	**IMMEDIAL BROWN B pat. [C].** — Cot. S.v., W gray–YO Bkn. — Cot. d., Y–OY Bkn (L). — Wool d., Y–OY Bkn (L).
1418	**AURONAL BROWN 2G [t.M].** — Cot. S.v., YOS1. — Cot. d., white. — Wool d., OYT2.
1419	**IMMEDIAL CUTCH R [C].** — Cot. S.v., YO Bkn (M). — Cot. d., sl. stain. — Wool d., O Bkn (L).
1420	**IMMEDIAL YELLOW-BROWN EN [C].** — Cot. S.v., YOS1. — Cot. d., white. — Wool OYT2.
1421	**IMMEDIAL ORANGE C pat. [C].** — Cot. S.v., YOS1. — Cot. d., white. — Wool d., white.
1422	**IMMEDIAL ORANGE C SOLUBLE [C].** — Cot. S.v., YOS1. — Cot. d., white. — Wool d., white.
1423	**THIONOL BROWN B (Lev).** — Cot. S.v., YO Bkn (M). — Cot. d., alm. white. — Wool d., alm. white (pale Bkn YO).
1424	**THIOGENE BROWN GC [M].** — Cot. S.v., YO Bkn (M). — Cot. d., white. — Wool d., alm. white.
1425	**THIOGENE ORANGE R [M].** — Cot. S.v., YO Bkn (M). — Cot. d., white. — Wool d., alm. white.
1426	**PYROL BROWN G EXT. [L].** — Cot. S.v., YOS2. — Cot. d., white. — Wool d., white.
1427	**THION BROWN R Conc. [K].** — Cot. S.v., YO Bkn (M). — Cot. d., white. — Wool d., cream.
1428	**KATIGENE YELLOW-BROWN R [By].** — Cot. S.v., YO–OY, T2 dull. — Cot. d., white. — Wool d., white.

whose colors are not discharged by rongalite in Test 11b.

No.	(2) Color of cotton directly dyed (" Cot. d.," T.5). (3) Color of wool directly dyed (" Wool, d.," T.5).
	SECTION OF ORANGE-YELLOW COLORS ON " COTTON S.v."
1430	**THION BROWN G [K].** — Cot. S.v., OY Bkn (M). — Cot. d., OY Bkn (L). — Wool d., OY Bkn (L).
1431	**THIOXINE BROWN G [O].** — Cot. S.v., ←OYS2. — Cot. d., OY Bkn (M). — Wool d., OYS2.
1432	**KATIGENE CHROME BROWN 5G [By].** — Cot. S.v., ←OYS1. — Cot. d., OYT1 dull. — Wool, d., OYS1.
1433	**YELLOW-BROWN KATIGENE 5G EXT. [By].** — Cot. S.v., ←OYS2. — Cot. d., OY Bkn (L) uneven. — Wool d., OY Bkn (L).
1434	**THIOGENE KHAKI O [M].** — Cot. S.v., OYS2 dull. — Cot. d., Y Bkn (L) uneven. — Wool d., Y Bkn (L).
1435	**THIO CATECHINE 2 [P].** — Cot. S.v., OY Bkn (D). — Cot. d., alm. white. — Wool d., VR Bkn (v.L)–gray.
1436	**SULPHUR YELLOW R EXT. [A].** — Cot. S.v., OY→ sl. dull. — Cot. d., white. — Wool d., YOT3–.
1437	**AURONAL ORANGE R [t.M].** — Cot. S.v., OY–YO dull. — Cot. d., white. — Wool d., OYT3–.
1438	**KRYOGENE YELLOW R [B].** — Cot. S.v., OY. — Cot. d., white. — Wool d., OYT2.
1439	**SULPHUR BROWN G and 2G [A].** — Cot. S.v., OYS3. — Cot. d., besmeared, W gray (L). — Wool d., OY Bkn (v.L).
1440	**AURONAL YELLOW GR [t.M].** — Cot. S.v., OY. — Cot. d., white. — Wool d., YT3.
1441	**THIOGENE YELLOW G [M].** — Cot. S.v., OYT1→ sl. dull. — Cot. d., white. — Wool d., ←YT3.
1442	**CACHOU DE LAVAL [P].** — Cot. S.v., OY Bkn (D)–W gray (D). — Cot. d., white. — Wool d., white.
1443	**CACHOU S [P].** — Cot. S.v., OY Bkn (L)–OY gray. — Cot. d., white. — Wool d., alm. white.
1444	**IMMEDIAL YELLOW D pat. [C].** — Cot. S.v., OYT1. — Cot. d., white. — Wool d., white.
1445	**ECLIPSE YELLOW G EXT. [G].** — Cot. S.v., OY. — Cot. d., white. — Wool d., white.
1446	**ECLIPSE YELLOW R EXT. [G].** — Cot. S.v., ←OY. — Cot. d., white. — Wool d., white.
1447	**IMMEDIAL CUTCH G pat. [C].** — Cot. S.v., ←OYS2. — Cot. d., white. — Wool d., white.
1448	**PYROGENE ORANGE O [I].** — Cot. S.v., OYT1 sl. dull. — Cot. d., white. — Wool d., alm. white.
1449	**THIOGENE ORANGE GR [M].** — Cot. S.v., OYT2. — Cot. d., white. — Wool d., OYT4.
1450	**THIOGENE ORANGE 2R [M].** — Cot. S.v., OY Bkn (L) uneven. — Cot. d., white. — Wool d., white.
1451	**THION BROWN O Conc. [K].** — Cot. S.v., ←OY Bkn (L). — Cot. d., white. — Wool d., cream.

No.	COORDINATION SEQUENCE. — (1) Color of cotton dyed from a sodium sulphide vat ("Cot. S.v.," T.7).
	SECTION OF YELLOW COLORS ON "COTTON S.v."
1452	THIOGENE BRONZE G [M]. — Cot. S.v., Y Bkn (D). — Cot. d., Y Bkn (L)-W gray (D). — Wool d., Y Bkn (L).
1453	THIONOL BROWN O [Lev]. — Cot. S.v., Y Bkn (v.D). — Cot. d., dirty light yellow-gray. — Wool d., Y Bkn (v.L).
1454	THIOXINE BROWN BBG [O]. — Cot. S.v., Y Bkn (M). — Cot. d., Y Bkn (M) uneven. — Wool d., Y Bkn (L+). — Rong. changes to YO-O Bkn (M); ret., compl.
1455	KATIGENE KHAKI G EXT. [By]. — Cot. S.v., Y Bkn (M). — Cot. d., white. — Wool d., Y Bkn (L). — Rongalite changes to YOS2.
1456	THIOGENE GOLD-YELLOW A Conc. [M]. — Cot. S.v., ←YT2– uneven. — Cot. d., white. — Wool d., OYT3 uneven.
1457	IMMEDIAL YELLOW GG [C]. — Cot. S.v., YT1. — Cot. d., white. — Wool d., YT3-4.
1458	IMMEDIAL YELLOW OLIVE G [C]. — Cot. S.v., Y Bkn [M] sl. uneven. — Cot. d., white. — Wool d., YT4.
1459	KATIGENE YELLOW G EXT. and GG EXT. [By]. — Cot. S.v., Y. — Cot. d., alm. white. — Wool d., ←YT2.
1460	KATIGENE YELLOW G [By]. — Cot. S.v., Y. — Cot. d., white. — Wool d., YT3.
1462	ECLIPSE YELLOW 3G EXT. [G]. — Cot. S.v., Y. — Cot. d., white. — Wool d., white.
1464	SULPHUR YELLOW G EXT. [A]. — Cot. S.v., Y. — Cot. d., white. — Wool d. white.
1465	PYROL YELLOW G [L]. — Cot. S.v., ←YT1. — Cot. d., white. — Wool d., white.
1466	THIOGENE YELLOW 2G [M]. — Cot. S.v., YT2 sl. dull. — Cot. d., white. — Wool d., alm. white.
1467	THIONOL YELLOW G [Lev]. — Cot. S.v., Y. — Cot. d., white. — Wool d., white.
1468	THIONOL YELLOW R [Lev]. — Cot. S.v., YT1 +. — Cot. d., white. — Wool d., white.
1469	THIOXINE YELLOW G [O]. — Cot. S.v., YT1. — Cot. d., white. — Wool d., alm. white.
	SECTION OF GREEN-YELLOW COLORS ON "COTTON S.v."
1470	CROSS DYE DRAB [H]. — Cot. S.v., GY Bkn (D). — Cot. d., white. — Wool d., cream white.

No.	(2) Color of cotton directly dyed (" Cot. d.," T.5). (3) Color of wool directly dyed (" Wool d.," T.5).
	SECTION OF GRAY COLORS ON " COTTON S.v."
1471	**THIO CATECHINE NO. 3** [SS]. — Cot. S.v., W gray (M). — Cot. d., R Bkn (v.L). — Wool d., VRT1 sl. dull.
1472	**THIOGENE BROWN S** [M]. — Cot. S.v., W gray (D). — Cot. d., W gray (D). — Wool d., R Bkn (v.D).
1473	**CACHOU DE LAVAL R** [SS]. — Cot. S.v., W gray. — Cot. d., Y gray (L). — Wool d., W gray (M).
1474	**KATIGENE BLACK-BROWN N** [By]. — Cot. S.v. and d., W gray (M, yellowish). — Wool d., W gray (M, pinkish). — Rong. changes to blue-gray (D).
1475	**IMMEDIAL DARK BROWN D** [C]. — Cot. S.v., W gray (D)-YO Bkn (D). — Cot. d., white. — Wool d., Y Bkn (v.L).

CHAPTER IV.

THE IDENTIFICATION OF DYESTUFFS IN MIXTURES.

The fact to which attention was called in Volume I, that, except in special cases, the constituents of organic mixtures can be satisfactorily identified only after their isolation as pure compounds, adds greatly to the difficulties of the color analyst, the practical problems of dyestuff analysis being oftener concerned with dyestuff mixtures, dyed textiles, and other colored manufactured products, than with the identity of pure colors. Infallible rules for the isolation of homogeneous dyestuff species from all classes of mixtures cannot be formulated; but it is possible to give suggestions for analytical procedures which may be applied with a good prospect of success in many of the most important cases. These suggestions being less definite in form than the directions for the numbered tests in the general procedure of Chapter II, the degree of success following their adoption will depend more largely on the experience, ingenuity, and persistence of the analyst. Nevertheless, it will be convenient to present them as a series of *numbered procedures* introduced by the explanatory *key paragraphs E*, thus continuing the conventional arrangement of subject matter adopted in the earlier chapter.

E.

If the material under examination is a mixture of dyestuffs, consult the suggestions of Procedure 41 (Examination of Mixed Dyestuffs).

If it is a dyed textile, apply Procedure 42 (Preliminary Examination of Textile Dyeings), and then consult Procedure 43 (Isolation and Identification of Dyestuffs on Textiles).

If it is colored food material, consult Procedure 44 (Isolation and Identification of Dyestuffs in Foods).

PROCEDURE 41.

EXAMINATION OF MIXED DYESTUFFS.

Separate the mixture as completely as possible into its constituent dyestuffs by any convenient method or combination of methods. Some of the most important of these are described below. Dye the separated colors from a neutral aqueous solution or suspension, as directed in Test 5, except that, as the quantities of pure colors isolated will often be small, the experiments may have to be made on a reduced scale to insure the necessary depth of color in the dyeings. Use these dyeings as the material for testing by the regular analytical procedure indicated by the *key paragraphs B*, *C*, and *D* on page 9.

Trial of procedure *a* is to be generally recommended. It is not often wholly successful, but it never involves loss of material. Procedure *b*, in the writer's experience, leads to success in a larger proportion of cases than any other, especially when the material for examination is limited. Procedure *c* is also a method of approved value, and can be applied with advantage to some complex mixtures to prepare the way for a more effective employment of *b*.

(41-a) Separations by Fractional Solution. — Shake a small quantity of the dry powdered dyestuff with any neutral, volatile organic solvent like ether, alcohol, amyl alcohol, chloroform, petroleum ether, benzene, ethyl acetate, etc., which preliminary experiments may have shown dissolves it only in part, leaving a residue different in appearance from the original material. Decant the colored solution after settling, and filter. Repeat the extraction and decantation until nothing more dissolves, or until the solution obtained begins to show a pronounced change in hue. Evaporate the solvent on a water bath. If the soluble and insoluble residues are still mixtures, they must be again heated with other solvents, or subjected to further fractionating treatments by Procedure *b* or *c* below.

Observation. — When material is limited, the preliminary experiments for the selection of a suitable solvent may be made with milligram quantities in narrow glass tubes and the dyestuff afterwards recovered by uniting the mixtures and evaporating the solvents. It is inadvisable to choose a liquid whose selective action as a solvent is slight.

(41-b) Separations by Fractional Dyeing and Stripping. — Omit sub-procedure *b′* and begin with *b″* unless the solution of the dyestuff mixture gives a precipitate with tannin in Test 18-*c*, and is thus shown to contain basic colors, it being rather unusual to find acid and basic colors associated in the same mixture.

41-*b′* (*Basic Colors are Present*).

Prepare the dye bath to contain 0.1 gram of the mixed colors in 100 cc. of distilled water. Add 5 drops of aqueous ammonia (spec. grav., 0.90). Dye in this bath at a temperature several degrees below the boiling point successive 3-gram portions of well-washed white Saxony woolen yarn, or Henrietta cloth, until the last addition appears almost uncolored after washing. Remove each portion of wool after ten or fifteen minutes' dyeing, returning to the bath all dye liquor that can be squeezed from the fiber, and wash the dyed wool, first with boiling one per cent ammonia, and then with pure cold water, rejecting the wash waters. Preserve the dye bath, if only partially exhausted, for use in Procedure *b″*. Strip the color from the dyed wool by covering with five per cent acetic acid and gently boiling for a few minutes. Decant the colored extract and repeat the extraction until the wool is nearly white. Evaporate the acid extract to dryness in an open dish on a water bath. The residue will probably contain all the basic colors in the mixture.

If there are indications that this residue is still a mixture, prepare a new neutral dye bath from it by dissolving it in from 100 to 500 cc. of distilled water, it being well to have this bath considerably less concentrated than the ammoniacal bath of the last paragraph. Dye in this solution, heated in a boiling water bath, successive portions of Henrietta cloth, withdrawing each portion as soon as the dyeing reaches the depth of a full normal tone. Rinse the dyeings with hot water. If the bath is not well exhausted after several portions of wool have been introduced and withdrawn, add one or two drops of ammonia before making the final addition of wool. Aim to introduce such quantities of wool at one time that the bath may be exhausted after three to six additions. If the dyeings have been made equally heavy and mixed colors are present, the hues of some of the pieces will probably be distinctly different from those of the others. If all are alike, attempt to identify the color by using some of the cloth as the source of material for the tests of the general analytical procedure of Chapter II. In the alternative case, proceed to the systematic fractional stripping and dyeing of each distinctly different kind of color.

Cover each piece to be stripped with dilute acetic or formic acid. Boil for a few minutes and decant. Repeat these operations until the stripping is complete. Begin the extraction with a 1.0 per cent acetic acid, and, if the stripping is too slow, increase the strength of the acid gradually to five per cent or use one per cent formic acid. Evaporate the extracts obtained in each successive stage of the extraction separately on a water bath. It is not often desirable, however, to separate the total extract from each piece of cloth into more than three portions. Dissolve each of the residues in about 5000 to 10,000 parts of distilled water. Dye in each solution at a boiling temperature a succession of small pieces of Henrietta cloth, removing and washing each in turn as it becomes dyed to a normal tone as required in Test 5. Smaller pieces of cotton should be introduced along with some of the wool dyeings to determine the " Division " to which the dyestuff belongs in the analytical tables. Apply the tests of key paragraphs B, C, and D of Chapter II to such of these small dyeings as have the appearance of being homogeneous and different. As the final dyeings may not exceed a square inch in area, some of the tests will have to be made on a reduced scale.

41-*b''* (*Acid Colors are Present*).

Boil the ammoniacal solution remaining after the removal of the basic colors from the original dye bath mentioned in the first paragraph of Procedure 41-*b'* in an open dish until all free ammonia is expelled. Dilute the solution with water until the concentration of the dyestuff is estimated to be about 1:5000; i.e., to such a concentration that if nothing had been removed by the treatment of *b'*, the volume would now be 500 cc. Acidify with one drop of glacial acetic acid. Endeavor to exhaust this almost neutral bath at a boiling temperature by the introduction of successive portions of white Saxony worsted or Henrietta cloth weighing not more than one gram each. Remove each portion of wool when dyed as deeply as a normal tone, and wash. If the dye bath will not extract well when neutral, or ceases to color the wool after a certain number of additions have been made, acidify it with several drops of dilute sulphuric acid. Unite consecutive dyeings which from their colors and behavior towards reagents are regarded as nearly identical.

Cover each aggregate of wool dyeings with an aqueous ammonia solution containing from 0.5 to 5.0 per cent of 0.90 specific gravity ammonia. Digest hot for a short time with occasional stirring. Decant when the solution is strongly colored, before more than one-third of the color has been stripped, but being guided chiefly by the changes in the color of the wool and extract. Repeat this fractional stripping until all color is removed. Evaporate dissimilar extracts separately on steam baths, continuing the heating at least five minutes after the residues appear dry. Unless this heating subsequent to evaporation is applied, some of the sulphonated triphenylmethane colors, like Light Green SF Yellowish [B], are changed temporarily to colorless carbinol derivatives whose presence would be overlooked. Baking restores the color. It is usually convenient to obtain the evaporated residues from these strippings in three portions, evaporating together solutions that have like colors or similar absorption spectra. Prepare a neutral dye bath from each residue and dye in it successive small portions of wool accompanied by smaller pieces of cotton. Finally, acidify the bath if it evaporates too slowly. Examine as many of these small dyeings by the procedure of Chapter II as is deemed advisable.

Observations. — No two dyestuffs under identical conditions are absorbed by the textile fibers, or stripped from their dyeings at exactly the same rate. It is to be anticipated that colors which dye rapidly will strip slowly, and *vice versa*, but the rule does not always hold good in the case of complex mixtures. If it were universally true that the rates at which the several components of mixed dyestuffs are absorbed in dyeing were inversely proportional to the rates at which the same colors are removed from the same fibers in acid or alkaline strippings, it would evidently be possible to combine the methods of fractional-stripping and dyeing in a thoroughly rational and economical manner. Practically, however, the most effective combinations, and the number of repetitions required for these operations, must be determined for each mixture by tentative experiments.

When two dyestuffs in a mixture are identical in hue the progress of a separation may nevertheless sometimes be readily followed by chemical tests with reagents on the dyed fibers. Thus Napthol Yellow S and Brilliant Yellow [By] both dye wool yellow; but the Brilliant Yellow dyeings are changed to red by caustic soda, while the Naphthol Yellow dyeings remain unchanged. The generally easy visibility of the progress of separations by Procedure 41-*b* is one of its greatest merits.

(c) **Separations by Use of Immiscible Solvents.** — Shake 100 cc. of a 1:1000 aqueous solution of the coloring matter in a separatory funnel with successive 25 cc. portions of a volatile organic solvent which is not soluble in water. If a dyestuff passes into the organic solvent, separate the latter from the water and repeat the extraction until most of this extractive matter has been removed from the water. Other immiscible solvents may then be applied in succession in a similar manner. Evaporate the solutions in each solvent separately, and dye the residues fractionally on wool or cotton as described under Procedure (*b*) above. As in Dragendorff's well-known separation method for the alkaloids in toxicological investigations, use may here also be made, first in alkaline and then in acid solution, of the solvent series: petroleum ether, benzole, chloroform, amyl alcohol. Such a procedure is, however, too slow and complex to be used freely in ordinary practice. Rota's much cited procedure for dyestuff separations by aid of ether (The Analyst, 1899, p. 45) is founded on the same principle, and as it gives a good special illustration of the use of immiscible solvents it is here reproduced in full as a footnote.* For further information regarding the use of

---

* **Separations with Ether (A. G. Rota).** — "It is possible to separate basic from acid colouring matter by adding potash to a dilute aqueous solution of the dye and shaking with ether, when the free bases dissolve in the ether, leaving the acids in the aqueous layer. The details of the process are as follows: 100 cc. of the aqueous solution of the colouring matter are decomposed with 1 cc. of a 20 per cent solution of potash, and shaken with three times the volume of ether. The aqueous alkaline solution of the acid colouring matter is neutralized with acetic acid and examined subsequently. The ethereal solution of the colour base is washed with faintly alkaline water, and then shaken with one-third of its volume of 5 per cent acetic acid. The acid layer is separated, and on evaporation on the water bath leaves the colouring matter as a residue. In those cases in which the colour remains in the ether, the latter is evaporated. In the presence of potash some few acid or neutral colouring matters are also extracted by the ether, as, for example, Quinoline Yellow, Indophenol Blue (soluble in alcohol), the various Sudans, etc. These are all insoluble in water, but soluble in alcohol.

"In the extraction of the colour bases different alkalies have different liberating powers. Thus, Safranine requires caustic potash, while for Fuchsine ordinary ammonia is sufficient; others, again, such as the Indulines, Oxyazines, and Acridines, have their colour bases set free by very dilute ammonia; and others, such as Chrysoidine, Bismarck Brown, Rhodamine S [By], Victoria Blue, etc., dissociate in dilute aqueous solution. Thus, separation can often be made by successively shaking the aqueous solution with ether, first alone, then together with 1 per cent ammonia, then with concentrated ammonia, and finally with 20 per cent potash. A further separation of the bases taken up by the ether can sometimes be effected by shaking the ethereal solution with an equal volume of water, some being taken up by the water, others remaining in the ether. In this way it is possible to separate Acridine Yellow from the very similar Phosphine. The colour bases remaining in the ether differ in their behaviour towards 5 per cent acetic acid, some combining with it, others remaining unaltered.

"The acid colouring matters not extracted by ether from an alkaline aqueous solution can be separated by methods similar to those used with the colour bases. By successive extractions with immiscible solvents in this test and a table giving the solubilities of many dyestuffs in numerous solvents, see Circular No. 35 of the Bureau of Chemistry, U. S. Department of Agriculture, by H. M. Loomis.

PROCEDURE 42.

PRELIMINARY EXAMINATION OF TEXTILE DYEINGS.

(a) **Extraction with Alcohol (or other Organic Solvents).**— Boil a small piece of the colored textile with a few cubic centimeters of strong alcohol, and note whether the dye is wholly or partially stripped. If it is not stripped, use the same piece of material in *b*.

(b) **Extraction with Acid.** — Repeat experiment *a*, substituting one per cent formic acid or five per cent acetic acid for alcohol. If the material is not stripped, or only partly stripped, use it again, after rinsing, in *c*.

(c) **Extraction with Ammonia.** — Repeat experiment *a*, substituting a one to five per cent solution of 0.90 specific gravity ammonia for alcohol.

(d) **Testing for Mordants.*** — This test is to be applied if the stripping by *a*, *b*, and *c* was incomplete. Destroy the organic matter in not less than one gram and make a careful qualitative examination of the ash by the usual methods, searching especially for antimony, tin, copper, iron, manganese, chromium, and aluminium (zinc, calcium, and lead). In the case of wool dyeings the organic matter is most conveniently destroyed by incineration in a crucible. The color of the ash will then often disclose the nature of the mordant metal. Cotton dyeings, which are liable to contain basic colors dyed on an antimony mordant, are, however, better treated in a porcelain dish with 5 cc. of concentrated sulphuric acid, heated until the acid begins to fume, and powdered potassium nitrate then added, with stirring in small portions and in quantity just sufficient to produce a colorless solution. The excess of acid is then evaporated at as low a temperature as possible on a sand bath. The residue is dissolved in a little dilute hydrochloric acid and the antimony precipitated as sulphide. Direct ignition of the cloth is likely to be accompanied by loss of the volatile metal.

(e) **Testing for Sulphur Colors.** — If the dyeing was not readily stripped in either *a*, *b*, or *c*, and is on cotton, test for sulphur colors by the method of Green and Stevens as described in the last paragraph of the "*Observations*" on Test 4, on page 13.

(f) **Color Discharges and Returns in Reduction and Oxidation Tests.** — Apply directly to some of the dyed material Tests 8, 9, and 10; or, with vat dyeings on cotton, Test 12. Colors of Genus III being removed and destroyed by this treatment, a pronounced change without destruction of color by rongalite sometimes points the way for the elimination of an azo color from a mixture with species of other genera.

---

ether they can be separated into three groups: (1) those extracted by ether in the presence of acetic acid of 1 per cent strength; (2) those soluble in ether in the presence of hydrochloric or sulphuric acid; and (3) those insoluble in ether. Erythrosin can thus be separated from Roccellin and from Bordeaux B, and direct Yellow [A] from Congo Brown R [A], and from Congo Red [A]. By treating the ethereal solutions with water and dilute ammonia, as in the case of the basic colouring matters, a further separation can often be made, as, for instance, picric acid from Martius Yellow."

* For further details see "Koloristische u. textilchemische Untersuchungen," P. Heermann, Berlin, 1903. As a direct test for tannic acid, Heermann (p. 184) advises to extract the mordanted fiber in succession with hot water, 2 per cent sodium carbonate solution, and 5 per cent acetic acid, and to add a drop of ferric chloride to each extract after neutralization, if necessary, with acetic acid or sodium carbonate. Blackening indicates tannin. According as the tannin is free, in excess, or more or less firmly held in combination by other mordants, it is extracted by the different solvents.

PROCEDURE 43.

ISOLATION AND IDENTIFICATION OF DYESTUFFS ON TEXTILES.

(a, b, c) (Direct Dyeings). — If colored extracts are obtained in the extraction experiments *a*, *b*, or *c* of Test 42, repeat the extractions on a much larger scale and evaporate the alcoholic, acid, or ammoniacal extracts to dryness on a water bath. Then proceed to the examination of each residue by the methods of Test 41-*b*, or of Chapter II, according as the color is homogeneous or mixed.

Observations. — Toppings with basic colors on dyeings with acid or mordant colors can often be separated from the latter in a condition of high purity by a single acid extraction, even when their quantity is relatively very small. Alcohol is less frequently useful in these separations than acid or ammonia.

Many colors whose fastness has been increased by after treatments, and some, like Cloth Red G (By) which are recommended for use on chrome mordanted wool, may be stripped by the dilute acid or alkaline extraction in sufficient purity and quantity to enable ready identification. Knowledge that metallic mordants are present is therefore not sufficient reason for leaving colored extracts obtained by such methods unexamined, although conclusions under these circumstances should be drawn with much caution.

(d) Mordanted Dyeings. — [(*d'*) *On Tannin Mordants*]. If Test 42-*d* applied to a cotton dyeing shows the presence of a tannin (or tannin and antimony mordant), the tannin must first be removed by the following treatment with saline caustic soda proposed by Green (Jour. Soc. Dyers and Colorists, 1907, p. 252): Cover the wetted cloth with a solution prepared by the addition of 10 cc. of a 35 to 40 per cent solution of caustic soda to 100 cc. of a saturated solution of common salt. Boil for 30 seconds. Immediately pour off the solution and wash adhering alkali from the fiber with cold water. The tannin will be removed, leaving the fiber impregnated with the free color bases, which may be colorless. Extract them from the cotton by boiling with an excess of one per cent formic or acetic acid, and evaporate the extract to dryness on a water bath. It is said that " In the case of a few dyestuffs which are more difficult to strip (e.g., basic grays), it is necessary to extract the color with dilute hydrochloric acid (1:20)". Examine the residue by the methods of Procedure 41. Some mordant dyes like Turkey Red are partly decomposed by the saline caustic; but the acid extracts in such cases do not show the colors of the original dyed materials and will not give precipitates with tannin in Test 18-*c* like basic dyes.

[(*d''*) *On Chromium and Aluminium Mordants.*] Dyeings on metallic mordants not provided for in the foregoing paragraphs may be treated as follows: Cover about 2 grams of the dyed fiber in a small flask fitted to a reflux condenser with a mixture of 5 volumes of alcohol and 1 volume of hydrochloric acid of specific gravity 1.20. If the color lake is not easily decomposed and the color stripped after some minutes' boiling, pour off the solution and repeat the extraction with an additional quantity of fresh solvent. Evaporate the decanted alcoholic solutions to about one-tenth of their original volume. Cool. If a precipitate appears, collect it on a small filter, and wash it well in the cold with dilute hydrochloric acid. If the mordant is chromium, aluminium, or iron, and the dyestuff is a non-basic oxyketone derivative, the coloring matter will usually pass into the alcoholic stripping solution accompanied by chloride of the mordant metal. The dye being only slightly soluble in cold, dilute aqueous acid, precipitates after the evaporation of the alcohol. The color is very likely to be at first contaminated by traces of metallic salts or lakes. It should hence always be purified by recrystallization (or sublimation after drying). Recrystallization from a very small volume of boiling glacial acetic acid has been found the most practical method for colors which are alizarine derivatives. Identify the purified dyestuff by Test 41 or the general procedure of Chapter II.

Observations. — The *d''* procedure fails with the true Alizarine blues — apparently because of the influence of the quinoline nucleus. The results obtained with such oxyketone colors as Turkey Red, Alizarine Orange [M], Alizarine Maroon Paste [B], Cœruleïne Paste [H], and Anthracene Yellow [By] have, on the contrary, proved rather remarkably satisfactory, some of the purified products melting sharply at the exact temperatures characteristic of the pure compounds, and being secured with less loss than might have been anticipated in view of the drastic treatment to which they had been subjected. Further study and improvement of the method is to be desired.

(e) **Developed Colors.** — Satisfactory general methods for stripping colors which are developed by oxidation on fibers impregnated with the reduction products of the hydrosulphite or sodium sulphide vats have yet to be elaborated. The stripping agents used in the earlier procedures do not dissolve these colors, and even the alkaline hydrosulphite and sulphide solutions are usually not very effective. Resort to special solvents may become necessary. Indigo, for example, is gradually stripped by boiling glacial acetic acid.

Colors produced on the fibers by diazotization and development may be stripped by appropriate acid or alkaline treatments like other azo colors; but the analytical tables in the present edition of this volume do not make provision for their identification. It is hoped that these deficiencies may be later remedied.

PROCEDURE 44.

ISOLATION AND IDENTIFICATION OF DYESTUFFS IN FOODS.

The enforcement of the legal restrictions which have been placed on the addition of foreign coloring matter to foods and beverages in many countries has necessitated the development of special analytical methods for the detection of unlawful color. These methods have been found especially important in the inspection of such articles as jams, jellies, preserves, confectionery, syrups, cordials, wines, spirits, flavoring extracts, butter, cheese, milk, ice cream, macaroni, spices, etc., and will be found fully described in the standard works* on food analysis. They provide for the separation of the added color from the food by dyeing on wool, either directly or after a preliminary concentration by extraction with solvents, and also by the use of immiscible solvents. One of the most widely used is the double dyeing method of Sestegni and Carpentieri (Zeit. anal. Chem., 28 (1889), 639). About 100 cc. of the colored aqueous liquid, or, in the case of solids or semisolids, a mixture of the same volume obtained by diluting the material with a convenient quantity of water, is acidified with 1 cc. of hydrochloric acid — it being assumed that only acid colors will be present in such materials — and gently boiled for some five to fifteen minutes with white worsted, or a strip of the thin white woolen cloth known as "nun's veiling" which has been previously freed from grease by boiling, first, in a very dilute soda solution, and finally in water. The wool is rinsed in cold water, warmed for a few minutes in very dilute hydrochloric acid, and again rinsed. The color is next stripped from the fiber by boiling for some minutes, if necessary, with a solution of ammonium hydroxide (1 to 50). The fiber is then removed from the solution, the latter acidified with hydrochloric acid, and the color which it contains dyed upon a second piece of wool by boiling. The second dyeing fixes acid coal-tar and also lichen colors on the wool; but the fruit colors remain for the most part as inconspicuous dull stains on the first piece of wool after the extraction with ammonia. The dyed wool may then be subjected to tests with reagents. The second dyeing, besides purifying the coal-tar color, may be made to concentrate it, if a smaller piece of wool than was first dyed is used.

---

* A. E. Leach, Food Inspection and Analysis. (John Wiley & Sons, 1909.) E. H. Richards and A. G. Woodman, Air, Water, and Food. (John Wiley & Sons, 1909.) H. Leffmann and W. Beam, Select Methods in Food Analysis. (Blakiston & Sons, 1902.)

To a novice the readiness with which the coal-tar colors used in foods may be transferred in acid and neutral solutions from thick suspensions rich in sugar, starch, cellulose, alcohol, fats, and even protein matter, to wool, and then stripped and dyed again with little loss of substance and an actual gain in brilliancy, is surprising. A single stripping and redyeing, as recommended by Sestegni and Carpentieri, is, however, often insufficient to remove the dulling effect of fruit colors to such an extent as to prepare the wool for the tests of Chapter II. It is almost always better to strip and dye at least once more, and in each dyeing to accompany the wool by a bit of white silk. When there is no increase in purity of color on either the wool or silk after two successive dyeings, the fruit color will have been sufficiently eliminated. As there is always a probability that more than one coal-tar dyestuff may be present, it is not rational, when absolute identifications are sought, to rest content with a " double dyeing." The dyed cloth should be used as the material for a more systematic fractional stripping and dyeing procedure like that of Procedure 41-*b*''. The fractional dyeing must, of course, be made in test tubes. The concentration of the dye bath may be made about 1 to 10,000. The bath should be neutral unless acidification be found necessary to drive the color into the wool. In readily separable mixtures of not more than three colors, a bath containing one milligram of each dyestuff should be enough for the experiment. At the end of the fractionation the dyestuffs will be distributed in dyeings of varying degrees of homogeneity upon a large number — probably not less than 20 — of small pieces of wool. These pieces should be numbered when withdrawn from the dye bath, so that their positions in the fractionation sequence may not be lost. In the last series of fractional dyeings, 5 centimeter lengths of white Saxony worsted may be dyed successively to normal tones. Shorter pieces of cotton yarn should also be dyed along with the wool in a few of the fractions. These small dyeings will be sufficient for the tests of the procedure of Chapter II if the latter are made on a reduced scale. The small cotton dyeings are made to determine the "Division" in the tabular classification. The end dyeings in each fractionation series are the most likely to be homogeneous, but some intermediate portions selected on account of their appearance and their behavior towards reagents like concentrated sulphuric acid, caustic soda, or rongalite, should also be subjected to systematic examination. The substitution of knitting worsted for cloth has one slight disadvantage. Reagents sometimes produce color changes on such dyeings more rapidly than on the standard cloth dyeings of Test 5.

In official laboratories, where the chief concern is to determine whether colors under examination belong to a certain limited list of legally permitted dyestuffs, carefully prepared standard wool, silk, and cotton dyeings and samples of their afterchromed wool dyeings, should prove very helpful for purposes of comparison. One of the most valuable auxiliaries in this class of work is, however, the spectroscope. This is well illustrated by the case of the seven colors permitted in foods under the regulations of the American Federal Pure Food Law (Food and Drugs Act of June 30, 1906). Six of these colors have excellent absorption spectra. Some of the bands, it is true, overlap and interfere at certain concentrations in certain mixtures; but any of them may be identified in presence of the others if a partial separation is first effected by the fractional dyeing and stripping procedure. One of them (Indigo Extract), which contrary to the general rule is rather rapidly destroyed by heating with ammonia, cannot be satisfactorily identified when present in mixtures in small proportion by the fractional stripping and dyeing process, and may therefore be easily overlooked, but is easily detected by the spectroscope. Naphthol Yellow S, on the other hand, having no characteristic spectrum, can only be separated by fractional methods and identified by chemical tests. Hence it may easily escape observation in complex mixtures, when present in small quantities — its complete separation by fractional stripping and dyeing from Naphthol Orange [A] being slow and difficult.

INDEX

TO THE DYESTUFFS OF VOLUME III.

The reference number following the name of each dyestuff in this index is its "serial number" in the tables.

To distinguish dyestuffs for which original descriptions are provided from the "alleged identical or closely allied brands" mentioned on the right-hand pages of the tables, the abbreviations for the names of makers (enclosed in brackets) of the latter class of colors are printed in Gothic italics.

NO.
Acetine Blue R [B] 63
Acetylene Blue 3B [I] 613
" " 3R " 323
Acid Alizarine Black KSR [K] 753
" " Blue BB [M] 1098
" " " Black 3B [M] 1173
" " Brown RH ext. [M] 982
" " Gray B [K] 751
" " Green G, B [M] 1158
" " Grenade R [M] 908
" " Red B [M] 848
" Anthracene Brown RH ext. [By] 881
" " " T [By] 745
" " Red 3B [By] 854
" " " 5BL [By] 829
" " " G [By] 828
" Black 8B [By] 960
" Blue FS [M] 184
" " G [SS] 184
" " 6G [*C*] 285
" " R [SS] 185
" Blue-Black 3B [By] 961
" Chrome Blue B [By] 622
" " Brown T [By] 884
" Crimson [*H*] 811
" Cyanine BF [A] 100
" " GF " 87
" Fuchsine, SB [B], [*D*] [*DH*] [*L*] [*O*] 245
" Green conc. [K] [M] 257
" " ext. conc. [C] 257
" " 2BG [t.M] 259
" " GG [By] 258
" " " extra [By] 256
" " 780 [C] 257
" " [*By*] [*O*] [*t.M*] [*M*] 257
" Magenta, ext. [M], 77242 [C], [*B*] [*H*] [*etc.*] 245
" Navy Blue 4BS [K] 979
" Orange [*G*] 872
" Rhodamine R [B] [Klp] 1125
" " RR [I] 1119
" " RRR [B] 1118
" Rosamine A [*M*] 998
" Roseine 245
" Rubine SB [B] 783
" Victoria Green SN [B] 257
" Violet 4B ext. [*By*] & 6B [*G*] 307
" " 6B [*A*] 308
" " " [*By*] 233

NO.
Acid Violet 7B [B] [*I*] 296
" " " [*L*] 233, 309
" " 8B ext. [By] 209
" " 4BN [B] [*I*] 309
" " 6BN [B] [*I*] 302
" " 7 " [M] 205
" " 6BS [C] 297
" " N [M] [*M*] 234, 309
" " 4RS [M] [*B*] 310
" " S7B [B] 296
" " SRR [B] 246
" Yellow [*A*] [*F*] [*P*] 918
" " AT [C] 948
" " D [A] 900
" " RS [*D*] 891
" " S 946
Acme Yellow [*L*] 891
Acridine Orange NO [L] 1046
" " R [L] 1052-2
" Red B [L] 1027
" " B, BB, [*L*] [*SB*] 1027, 142
" " BB [L] [*L*] 1031, 1027
" " 3B [L] 142
" Scarlet R, 2R, 3R 1046
" Yellow [L] 1074
Afghan Yellow [*H*] 166
African Saffron 1147
Agalma Black 4B [B] 544
Algole Blue 3G paste [By] 1186
" Brown B [By] 1181
" Dark Green B paste [By] 1184
" Green B [By] 1185
" Orange R paste [By] 1179
" Red [By] 1176
Alizarine GD [*B*] 1134
" Ic [*By*] 905
" OG & OR [*By*] 1122
" No. 1 [*M*] 905
" No. 6 [*M*] 819
" RX [*M*] 1134
" SC [*BACo*] 1134
" SX [*B*] & SX ext. [By] 1134
" WS powd. [*M*] 1111
" V [B] [*I*] 905
" Astrole G [By] 1157
" Black B [By] 1096
" " 3B [By] 1174
" " P [M] 1152

NO.

Alizarine Black S [M] 1152
“ “ Bayer FB [By] 991
“ Blue pat. [B] 1090
“ “ paste [*B*] [*By*] 1168, 1172
“ “ sol. powd. [*BACo*] 1172
“ “ A, F, R, RR [*M*] & AB [*BACo*] 1168
“ “ AS [By] 1161
“ “ BR3G [By] 1169
“ “ DNW [M] 1167
“ “ GNX [Lev] 587
“ “ GWDS [By] 1162
“ “ JR [By] 1170
“ “ RDS paste [By] 1162
“ “ 2RNX [Lev] 601
“ “ S [B] 1172
“ “ SAP powd. [By] 1165
“ “ Black B [C] 995
“ “ “ SB [C] 968
“ “ Sky powd. [By] 1166
“ Bordeaux paste B [By] 1128
“ “ BP paste [*By*] 1128
“ Brown paste [*B*] [*By*] [*H*] [*M*] 915
“ “ powd. [M] 915
“ “ [M] 1142
“ “ [B] 1143
“ “ G paste [*By*] 915
“ “ SO powd. [B] 915
“ Cardinal [*By*] 1102
“ Carmine [*BACo*] 1111
“ Cyanine G [By] 1094
“ “ R paste [By] 1127
“ “ 2R, 3R, RA ext., NS, WRB, WRR, WRN [*By*] 1127
“ Fuchsine RD paste [By] 747
“ Green 80, 81
“ “ SP #3 [B] 81
“ Green paste [B] 1159
“ “ CK powd. [By] 1154
“ “ SC paste [B] 1159
“ “ SS [By] 557
“ Grenat R paste [M] 1102
“ Indigo Blue S [B] 1171
“ Irisole D paste [By] 976
“ Lanacyl Blue BB [C] 953
“ “ Violet B [C] 987
“ Maroon paste [B] 796
“ Navy Blue R paste [By] 1175
“ Orange powd. [*M*] 1122
“ “ A paste [*B*] 1122
“ “ AO & AOP [*BACo*] 1122
“ “ N [M] 1122
“ “ R [SS] 895
“ Red RS paste [B] 904
“ “ S [*B*] 1111
“ “ SDG paste [M] 906
“ “ W powd. [By] 1111
“ Rubinole R [By] 1099
“ Violet 1117
“ Yellow G [Lev] 532
“ “ 3G [Lev] 942
“ “ GT [B] 923
“ “ KR powd. [M] 911
“ “ RW [B] 886
“ “ YYFP [Lev] 924
Alkali Blue[M], [*A*] [*B*] [*By*] [*C*] [*D*] [*G*] [*L*] [*K*] [*O*] [*P*] [*t.M*] [*H*] [*DH*] [*I*] [*Lev*] [*Sch*] 198
Alkali Blue 5B [K] 193
“ “ 4R [A] 214
“ “ SFC [K] 217
“ “ 6B [*B*] [*H*] [*I*] 196, 282
“ “ D [A] [*A*] 282, 196
“ Blues 213
“ Fast Green B [By] 275

NO.

Alkali Fast Green 3B [By] 86
“ “ “ G “ 273
“ Violet 6B [B], [*I*] 216
“ “ R [B] 235
“ Yellow [*D*] 1067
“ “ [R] 1078
Alkaline Blue 7B [O] 193
Alphanol Blue BR ext. [C] 580
“ Brown B [C] 504
Alsace Green F [*t. M*] 1131
Amaranth [*BK*] [*C*] [*F*] [*M*] [*Lev*] 811
“ No. 107 [M] 811
Amaranthe [P] 811
American Saffron 1147
Amethyst Violet [K] 66
Amido Naphthol Red 6B [M] 763
“ “ “ G [M] 792
Amine Black 6B [A] 969
“ “ 4B [A] 997
“ “ 10B [A] 958
“ “ 4BG [A] 572
“ “ Green B [A] 952
“ Green Black B [A] 952
Anileïne 68
Aniline Purple 68
“ Red 139
“ Yellow [Kahlbaum] [*DH*] 932
Annatto 1054
Annotta 1054
Anthracene Acid Black ST [C] 986
“ “ Blue GG pat. [C] 96
“ “ Brown N [C] 479
“ “ “ G [C] 889
“ “ “ R [C] 460
“ Blue WB [B] 1091
“ “ WG [B] 1092
“ “ WGG ext. [B] 1093
“ “ WR [B] 1097
“ “ S 1172
“ Brown paste [*B*] [*H*] 1142
“ “ R & G paste [*By*] 1142
“ Chromate Black DR [C] 994
“ “ Brown EB [C] 425
“ “ “ 3G [C] 888
“ “ Green B [C] 989
“ “ “ FF [C] 1156
“ Chrome Black PPN ext. [C] 755
“ “ Blue BB [C] 741
“ “ “ FD [C] 103
“ “ “ F [C] 752
“ “ “ G [C] 993
“ “ Brown D [C] 484
“ “ “ SWN [C] 869
“ “ Violet B [C] 816
“ Green 80, 81
“ Red [By] [*I*] 395
“ Violet 1117
“ Yellow C [C] 931
“ “ paste [By] 1151
Anthracite Black B [C] 696
Anthragallol 1142
Anthraquinone Blue SR paste [B] 1160
“ “ “ “ ext. [B] 1160
“ “ “ “ powd. [B] 1160
“ Green GNX [B] 1155
“ Violet R powd. [B] 1108
Archil [AD] 73
Atlas Orange [*BrS*] 872
Auramine, I, II, III, [*B*] [*G*] [*I*] [*M*] [*S*] 1085
“ II. [By], O [B] [G], G [B] 1085
Aurantia [Kahlbaum] 897
Aureoline [*RH*] 1087
Auroflavine KR [M] 1072

NO.
Aurolin [H] 1087
Auronal Black 4G ext. [t.M] 1377
“ “ N ext. [t.M.] 1389
“ “ paste 3G ext. [t.M] 1354
“ “ “ N5G ext. [t.M] 1355
“ Blue 2B ext. [t.M] 1285
“ Brown 2G [t.M] 1418
“ Green TG ext. [t.M.] 1243
“ Orange R [t.M] 1437
“ Yellow GR [t.M] 1440
Aurophosphine 4G [A] 1074
Aurotine [Cl. Co.] 926
Autogene Blue BEE [SS] 1357
“ Brown G [SS] 1402
“ Gray (Gris Autogen) [P] 1370
Azarine S [M] 482
Azine Blue, Spirit Sol. [*D*] 63
Azo Acid Blue 3B conc. [M] 962
“ “ Magenta G [M] 241
“ “ Red BA [A] 794
“ “ “ 5B [M] 763
“ “ Rubine [*D*] 783
“ “ 2B [*D*] 811
“ “ Violet AL [By] 750
“ “ “ R ext. [By] 746
“ “ “ 4R [By] 746
“ “ Yellow [*A*] 910
“ Benzole Fast Crimson R ext. [B] 840
“ Blue [A] [*By*] [*L*] [*Lev*] 689
“ Brown O [*M*] 849
“ Blue Black [O] 682
“ Bordeaux [Sch] [*By*] 767
“ Carmine B, R [B] 75
“ “ G paste [*B*] 71
“ Chrome Blue TB [C] 779
“ Coralline [D] 837
“ Corinth [O] 470
“ Crimson S [By] 795
“ Eosine EBB [BS] 742
“ Orseille BB [C] 76
“ Flavine [*B*] [*D*] [*t.M*] 910
Azofuchsine Acide [*RF*] 783
Azo Fuchsine G [By] 757
“ “ 6B [By] 763
“ “ GN ext. [By] 773
“ Merino Black B [C] 964
“ Orchil R [A] 797
“ Phloxine 2G [By] 792
“ Red A [C] 803
“ Rubine [*t.M*] [*Lev*] [*O*] 783
“ “ A [C] 783
“ “ S [A] 783
“ “ S [*S*] 811
“ Violet [A] [*By*] [*L*] [*Lev*] 316
“ “ 4R [By] 746
“ Wool Blue C [C] 974
“ “ Violet 7R [C] 756
“ Yellow SE [B] 902
“ “ [*I*] [*K*] [*M*] [*S*] 910
“ “ M [*DH*] 910
“ “ BYE [PK] 914

Barwood [AD] 13
Bastard Saffron 1147
Bavarian Blue DBF [*A*] 191, 292
“ “ DSF [*A*] 200
Bayer Rhodamine SG [By] 1000
Bengal Deep Black B ext. [SS] 717
“ Green 177
“ Rosa [*C*] [*DH*] 1110
“ “ B [*CJ*] 1112
Bengaline [*K*] 61

NO.
Benzo Azurine [*By*] [*L*] [*Lev*] 640
“ “ G [A] 640
“ “ G conc. [SS] 641
“ “ 3G [By] [*A*] [*L*] [*Lev*] 673
“ Black Blue G [By] 659
“ Blue 3B [*By*] 642
“ “ BX [*By*] 676
“ Bordeaux 6B [By] 370
“ Brown [By] [*A*] [*Lev*] 1024
“ “ D3G ext. [By] 494
“ “ MC [By] 417
“ “ RC [By] 378
“ Chrome Black B [By] 664
“ “ “ N [By] 633
“ Chrome Brown B [By] 474
“ “ “ G [By] 467
“ “ “ 5G [By] 1056
“ “ “ R [By] 463
“ “ Navy Blue WR [By] 612
“ Copper Blue B, 2B, [By] 675
“ Cyanine B [By] 577
“ “ 3B [By] 606
“ Dark Brown [By] 543
“ “ “ ext. [By] 488
“ “ Green B [By] 555
“ Fast Black [By] 702
“ “ Blue BN [By] 621
“ “ “ R [By] 690
“ “ “ 5R [By] 610
“ “ Orange S [By] 445
“ “ Pink 2BL [By] 386
“ “ Red 9BL [By] 365
“ “ “ FC [By] 410
“ “ “ GL [By] 407
“ “ “ L [By] 373
“ “ Scarlet 4BA [By] 394
“ “ “ 8BA [By] 424
“ “ “ 8BS [By] 383
“ “ “ GS [By] 428
“ “ Violet R [By] 318
“ “ Yellow 5GL [By] 1079
“ Green C [By] 553
“ Indigo Blue [By] 699
“ Nitrol Bordeaux G [By] 392
“ Orange R [By] [*A*] [*L*] 513
“ Purpurine B [A] 1018
“ “ 4B [A] [Lev] [*By*] [*L*] [*O*] [*t.M*] [*S*] 1020
“ “ 4B conc. [SS] 1020
“ “ 6B [A] 411
“ “ 10B [By] 362
“ “ 10B conc. [SS] 375
“ “ 12B pat. [By] 360
“ Rhoduline Red B [By] 361
“ “ “ “ “ 357
“ Scarlet BC [By] 1023
“ Sky Blue [By] 573
“ “ “ conc. [By] 573
“ Violet R [By] 332
Benzyl Bordeaux B [I] 766
“ Green B [I] 266
Biebrich Acid Blue GG [K] 280
“ “ Red 2B [K] 795
“ “ “ 4B “ 743
“ “ “ 5B “ 744
“ “ “ B, 2B, 3G [*K*] 743
“ “ “ 3G [K] 865
“ Scarlet [*K*] 800
Bismarck Brown EE [C] 1030
“ “ R ext. [By] 454
“ “ Y [B] 454
“ “ YS [C] 453
Bitter Almond Oil Green 177

NO.
Black for Half Wool G [By] 710
Blue, Alcohol Soluble [*M*] 217
“ 1900 [DH] 45
“ (Base) SB [B] 199
Bois Jaune (Fr) 1148
Bordeaux B [*A*] [*BK*] [*H*] [*Lev*] [*M*] 778
“ BL [*C*] 778
“ BX paste [By] 1132
“ G [*D*] 778
“ G paste [By] 1133
“ R ext. [*M*] 778
“ S [By] [*RF*] 811
Boston Blue R [A] 647
Brazil Wood [AD] 1136
Brilliant Acid Blue R ext. [G] 300
“ “ “ V [By] 279
“ “ Green 6B [By] 270
“ Alizarine Blue B [Lev] 112
“ “ “ G paste & powd. [By] 117
“ “ “ R [*By*] 117
“ “ “ 3R pat. [By] 114
“ Anthrazurol [B] 1164
“ Azurine R [By] 644
“ “ 5R [By] 321
“ Benzo Blue 6B [By] 585
“ “ Green B [By] 551
“ “ Violet B [By] 672
“ “ “ 2R [B] [By] 317
“ Black B [B] 984
“ Bordeaux S [A] 801
“ Chrome Red paste [By] 1010
“ Cochineal 2R [C] 858
“ “ 4R [C] 813
“ Congo R [A] 1019
“ Cotton Blue, greenish [*By*] 191
“ Crimson O [M] 783
“ Croceine 3B [By] 852
“ “ 9B [C] 804
“ “ MOO [C] 823
“ “ Scarlet 3BX ext. [K] 845
“ Fast Blue B [By] 671
“ “ “ 2G [By] 589
“ Fuchsine [*O*] 139
“ Gallocyanine [*DH*] 95
“ Geranine B [By] 364
“ “ 3B [By] 369
“ Glacier Blue [*I*] 180
“ Green [By] [K] [M] [*C*] [*DH*] [*H*] [*O*] [*t. M*] [*etc.*] 170
“ Indigo Carmine, sol. [Lev] 287
“ Kiton Red B [Klp] 1104
“ Milling Blue B [C] 300
“ “ Green B [C] 265
“ Orange G [A] 491
“ “ G [M] 877
“ “ O [M] 875
“ “ R [M] 861
“ Ponceau G 835
“ “ GG [*C*] 875
“ “ 4R [*By*] 818
“ “ 5R [*By*] [*C*] [*D*] 826
“ Purpurine 10B [A] 366
“ “ R [A] [*By*] 1021
“ Red [Sch] 777
“ Rhoduline Purple R [By] 141
“ “ Red B [By] 10
“ Safranine G [A] 9
“ Scarlet GG [C] 875
“ “ 4R [C] [*Lev*] 826
“ Sky Blue G, 5G [By] 194
“ Victoria Blue RB [I] 206
“ Wool Blue B ext. [By] 289
“ “ “ G ext. [By] 288

NO.
Brom Indigo FB powd [By] 134
Brown SDM [P] 391
Brun N [P] 452
“ Naphtine *β* 871

Cachou S [P] 1443
“ de Laval [P] 1442
“ “ “ R [SS] 1473
Camelia 139
Camwood [AD] 15
Capri Blue [L] 19
“ “ GON [*L*] 19
Carbon Black GAT [M] 263
Cardinal Red [*H*] 777
Carminnaphte J [*DH*] 536
Carmoise [Lev] 783
Carmoisin S [*H*] 783
Carmoisine [*B*] [*By*] [*S*] 783
Carnotin [*Cl Co*] 1087
Cashmere Blue TG ext. [By] 971
Catechu 1135
Celestine Blue B [By] 105
Cerasine 777
“ [*DH*] 707
“ Orange G [*C*] 536
Cerise [*B*] [*C*] [*DH*] 139
Chicago Blue B [A] 588
“ “ 6B [A] 566
“ “ R [A] [*A*] 665, 988
“ “ 2R [A] 648
“ “ 4R [A] [*A*] 668, 688
“ “ RW [A] 605
China Blue [*A*] [*By*] [*L*] [*P*] 294
Chinaldine. See Quinaldine.
Chloramine Black ext. conc. [SS] 736
“ “ BH [S] 619
“ “ FF [S] 723
“ Green B [S] 549
“ Orange G [By] 151
“ Red B [S] 1023
“ “ 8BS [By] 1013
“ Sky Blue FF [S] 575
“ Violet R [By] 339
“ Yellow [*By*] 158, 165
“ “ G conc. [By] 155, 1066
“ “ GG [By] 169
“ “ W ext. [By] 524
“ “ C, RC & YY [By] 1066
Chlorantine Blue 2B [I] 313
“ Brown R [I] 480
“ Lilac B [I] 338
“ Orange TR [I] 149
“ “ TRR [I] 145
“ Yellow G [I] 1066
“ “ GG [I] 168
Chlorazol Blue B [H] 615
“ “ CB [H] 595
“ Brilliant Blue 10B, 12B, [H] 211
“ Brown G [H] 495
“ “ R [H] 477
“ Fast Yellow A [H] 1066
“ “ “ B [H] 1066
“ Green G [H] 548
“ Violet 3B [H] 333
Chlorin [*DH*] 1131
Chlorine Blue T [*B*] 129
Chlorophenine Y [Cl Co] 1066
“ Orange RO, RR, [Cl Co] 146
“ Yellow Y [*Cl Co*] 155
Chromanil Brown 2G [A] 514
“ “ R [A] 433
Chrome Acid Black G [I] 758

NO.
Chrome Blue B conc. [SS] 91
“ “ R [B] 783
“ “ R conc. [SS] 107
“ “ for Printing [C] 32
“ Brown JJ [SS] 533
“ “ RO [*M*] 849
“ Carmine A [By] 247
“ Fast Blue B [A] 783
“ “ “ 4B [A] 781
“ “ “ R [I] 780
“ “ Green G [I] 990
“ “ Red B [A] 388
“ “ “ B & G [*A*] 420
“ “ “ G [A] 422
“ “ “ R [A] 420
“ “ Yellow G [A] 938
“ “ “ G [I] 1062
“ “ “ 2G powd. [A] 933
“ Green [By] 176
“ Orange [SS] 892
“ “ paste [By] 876
“ “ powd. [By] 875
“ Yellow [SS] 925
“ “ DF [By] 937
“ “ J [SS] 927
“ “ P [G] 934
“ “ R ext. [By] 527
Chromine G [K] 1088
Chromocyanine B, V, [DH] 95
Chromotrope 2B [M] 784
“ 8B [M] 748
“ DW [M] 780
Chrysamine [P] 1060
“ G conc. [SS] 1060
“ G [A] [By] 1061
“ R [By] [*A*] [*L*] [*Lev*] 1060
Chryseoline Yellow T [J] 891
Chrysobarine G ext. conc. [t.M] 524
Chrysoidine [B] [*A*] [*By*] [*F*] [*K*] [*M*] [*Mo*] [*Sch*] [*t.M*] 509
“ AG cryst. [C] 508
“ E [B] 508
“ G [*DH*] [*G*] [*I*] 509
“ J [*I*] 509
“ R [B] 486
“ R [*C*] 509
“ Y [*H*] [*Lev*] 509
“ Y [B] 485
Chrysoine [*B*] 891
Chrysolin [Kell.] 919
Chrysophenine [A] [By] [*L*] [*SB*] 524
“ G [A] 524
“ ext. [B] 1063
“ R [By] 152
Ciba Red pat. [I] 128
“ Violet pat. [I] 135
Cinereine [P] 51
Citronine A [*L*] 946
“ [*Fi*] [*SB*] 910
“ NE [P] 505
Clayton Cloth Red [Cl Co] 419
“ “ “ [*Cl Co*] 400
“ Fast Black [Cl Co] 1359
“ Yellow [Cl Co] 1081
Clemantine [G] 2, 4
Cloth Red B [By] 371
“ “ G [By] 372
“ “ G [*O*] 382
“ “ G ext. [*By*] 382
“ “ GA [A] 382
“ “ R [*D*] 372
“ Scarlet G [K] 405
“ “ R [K] 768

NO.
Cochineal [AD] 774
“ Red A [*B*] 826
“ “ B [B] 843
“ “ RR [B] 823
“ “ 3R [B] 826
Coeruleïne paste A [M] 80
Coeruleïne paste [*B*] [*By*] [*DH*] 80
“ S [M] [*B*] [*By*] 81
“ “ powd. or paste [*B*] [*By*] [*DH*] [*M*] 1153
“ SW paste [M] 1153
Columbia Black B [A] 478
“ “ 2BX, 2BW, F, FB, FF, ext., [A] 727
“ “ R [A] 716
“ Blue G [A] 593
“ “ R [*A*] 668
“ “ R [A] 988
“ Bordeaux B [A] 376
“ Fast Blue GG [A] 591
“ “ Red F [A] 408
“ “ Scarlet 4B [A] 465
“ Green [A] 546
“ Orange R [A] 498
“ Red 8B [A] 399
“ Violet 2B [A] 326
“ “ R [A] 315
“ Yellow [*A*] 155, 158, 165, 167, 1066
Congo [A] [*By*] [*L*] [*Lev*] [*t.M*] [*O*] [*S*] 412
“ 4R [A] [*By*] [*L*] 461
“ Blue 3B [*A*] [*Lev*] 642
“ “ BX [*A*] [*Lev*] 676
“ Brown G [A] 489
“ Corinth B [*A*] [By] [*Lev*] [*L*] [*S*] 381
“ “ G [A] [By] [*L*] [*Lev*] [*S*] 377
“ Fast Blue B [By] 660
“ “ “ B ext. [A] 681
“ “ “ R ext. [A] 683
“ Orange G [A] 1055
“ “ R [A] [*By*] [*L*] 1033
“ Red R [*H*] 412
“ Rubine [A] 342
Coomassie Navy Blue 2RNX [Lev] 980
Coreïne AB [*DH*] 108
“ AR [*DH*] 108
“ RR [*DH*] 105
Cotton Black 3B [B] 685
“ Blue [*L*] 294
“ “ 3 [K] 187
“ “ IN [B] 293
“ “ R [*B*] [*P*] 34
“ Corinth G [B] 377
“ Fulling Black B [B] 703
“ Light Blue O [K] 187
“ Orange G [B] 1049
“ Red A [C] 409
“ Yellow G [B] 541
“ “ R [*B*] 1066
Creosotine Yellow G [O] [*A*] [*By*] 1059
Cresyl Blue [L] 44
“ “ BB, BBS [*L*] 44
Crimson [*PL*] 783
Croceine AZ [C] 807
“ 2B [*A*] 824
“ 3B [Sch] 810
“ Orange [K] [*By*] [*Lev*] 877
“ Scarlet [*K*] 824
“ “ 3B [*By*] [*K*] 841
“ “ 7B [By] 802
“ “ 8B [K] [*By*] 802
“ “ 9B [K] 799
“ “ 10B [K] [By] 798
“ “ 3BX [By] 824

NO.
Cross Dye Brown 4R [H] 1401
“ “ Drab *[H]* 1470
Crumpsall Yellow YYFP [Lev] 936
Crystal Ponceau [B] *[A]* 843
“ “ 6R *[C]* *[M]* 843
“ Scarlet 4BX *[K]* 826
“ “ 6R [C] 809
“ Violet *[B]* 229
“ “ 5B bluish [C] 231
“ “ 6B powd. [A] 231
“ “ 10B [C] 210
“ “ 5BO *[I]* 229
“ “ O *[M]* 229
Cuba Wood 1148
Cudbear [AD] 77
Cupranil Brown G [I] 500
“ “ R [I] 501
Curcuma 535
Curcumine S [L] 166
Curcuphenine [Cl Co] 163
Cutch Brown R conc. [SS] 468
“ ext. Y [AD] 1135
Cyanine B [M] 284
Cyanole ext. [C] 285
“ “ pat. [C] 285
“ FF [C] 285
“ Fast Green G [C] 275
“ Green B [C] 279
“ “ 6G [C] 281
Cyanosine sol. in Alcohol [M] *[K]* *[S]* 998
“ A ext. *[Mo]* 998
Cyanthrene B double [B] 1191
Cyanthrol R [B] 1167
“ RB [B] 1167
Cyprus Green B [A] 975
“ Blue R [A] 311

Dahlia 243
Dark Green *[B]* *[C]* 1131
“ Yellow ext. conc., sol. in fat *[F]* 890
Deep Blue ext. R 45
Delphine Blue B [S] 116
Delta Purpurine 5B [A] *[By]* 1017
Diamine Azo Bordeaux B [C] 443
“ “ Scarlet A [C] 421
“ “ “ B [C] 416
“ Bengal Blue G [C] 604
“ “ “ R [C] 677
“ Black BH [C] 715
“ “ BO [C] 652
“ “ DB [C] 579
“ “ HW [C] 560
“ Blue B [C] 686
“ “ BB [C] 642
“ “ 3B [C] 607
“ “ BX [C] 676
“ “ RW [C] 592
“ “ Black E [C] 654
“ Bordeaux B [C] 376
“ Brilliant Bordeaux R [C] 365
“ “ Scarlet S [C] 1022
“ Bronze Brown PE [C] 525
“ Brown M [C] 435
“ “ MR [C] 359
“ Catechine G [C] 499
“ Catechu aus Naphthylen Violet [C] 336
“ Dark Blue B [C] 608
“ “ Green N [C] 559
“ Fast Black X [C] 697
“ “ Blue FFB [C] 586
“ “ “ FFG [C] 625
“ “ Brown G [C] 476

NO.
Diamine Fast Brown R [C] 471
“ “ Gray BN [C] 705
“ “ “ RN [C] 638
“ “ Red F [C] 343
“ “ Scarlet 4B [C] 401
“ “ “ 6BS [C] 404
“ “ “ 8BN [C] 1004
“ “ “ GB [C] 436
“ “ “ GG [C] 450
“ “ Yellow A [C] 161
“ “ “ AGG [C] 542
“ “ “ B [C] 1066
“ “ “ B, C & FF, *[C]* 155, 165
“ “ “ FF [C] 1066
“ “ “ M [C] 1064
“ Gold Yellow [C] 518
“ Green CL [C] 554
“ “ G [C] 550
“ Heliotrope B, O, [C] 830
“ New Blue G [C] 626
“ “ “ R [C] 694
“ Nitrazol Brown BD [Math] 520
“ “ “ RD [Math] 439
“ Orange D [C] 148
“ “ F [C] 1033
“ “ G [C] 164
“ Red B *[A]* *[By]* *[L]* 1017
“ “ 4B [C] 406
“ “ NO [C] 1016
“ Rose [C] 354
“ “ B ext. [C] 389
“ “ BD [C] 340, 389
“ “ GGN pat. [C] 387
“ Scarlet B [C] 437
“ Sky Blue [C] 578
“ “ “ FF [C] 566
“ Violet N [C] 314
“ “ Red [C] 1008
Diamineral Black B [C] 545
“ Blue CV [C] 639
“ “ R [C] 632
“ Brown G [C] 462
Diaminogen B [C] 713
“ ext. [C] 569
“ Blue NA [C] 630
“ “ 3RN [C] 658
“ Sky Blue N [C] 567
Diamond Black F [By] 985
“ “ P2B, PV, [By] 761
“ Blue CVB [C] 675
“ “ R [By] 781
“ Bordeaux R [By] 789
“ Flavine G [By] 528
“ Green *[B]* 177
“ “ [By] 965
“ “ G *[B]* 170
“ Phosphine D [C] 1089
“ “ GG & PG [C] 1071, 1074
“ “ R [C] 1052–1
Dianil Black R [M] 662
“ Blue G [M] 568
“ “ 2R [M] 646
“ “ R, 2R, 3R *[M]* 322
“ “ 4R [M] 322
“ Brown R [M] 515
“ “ G [M] 472
“ “ 3GO [M] 438
“ Chrome Brown G [M] 464
“ “ “ R [M] 466
“ Crimson B [M] 365
“ Fast Scarlet 8BS [M] 367
“ Green G [M] 552
“ Orange N [M] 1029

NO.
Dianil Red 4B conc. [M] 1020
“ Yellow R [M] 1045
“ Yellow S [M] 252
Dianol Blue BH [Lev] 619
“ Brilliant Blue 6B [Lev] 584
“ Red ext. *[Lev]* 368
Dianol Sky Blue [Lev] 582
“ Violet R [Lev.] 329
Dianthine G 1123
Dianthrene Blue 2B [Klp] 133
Diazethyl Black B [By] 344
“ “ R [By] 465^1
Diazine Blue [K] 61
“ “ 2B [K] 628
“ Green *[K]* 26
Diazo Black 3 B [By] 643
“ “ BHN ext. [By] 651
“ “ R [By] 661
“ Bordeaux 7B [By] 341
“ Brilliant Black R [By] 1028
“ “ Orange G [By] 449
“ “ Scarlet B ext. [By] 396
“ “ “ 3B ext. [By] 356
“ “ “ 6B ext. [By] 384
“ “ “ 5BL ext. [By] 397
“ “ “ 2BL conc. [By] 402
“ “ “ G ext. [By] 396
“ “ “ PR ext. [By] 402
“ Fast Black B [By] 678
“ “ “ G [By] 581
“ Geranine B ext. [By] 7
“ Indigo Blue 2RL [By] 734
“ “ “ 4RL [By] 718
“ “ “ RR ext. [By] 590
“ Rubine B [By] 441
Dimethylaniline Orange 898
Dioxine *[L]* 79
Diphenylamine Blue *[KS]* 191, 292
“ Orange 900
Diphenyl Blue RR [G] 337
“ “ Black BD [G] 653
“ Catechine G [G] 502
“ Chrysoin RR [G] 512
“ Citronine G [G] 254
“ Fast Yellow G [G] 1066
“ “ “ GG [Kell] 1091
“ Green G [G] 558
“ “ KGC [Kell] 553
“ Orange RR [G] 446
“ “ 900
“ Red 8B [Kell] 1015
“ Yellow 3G [Kell] 162
Direct Black RC [By] 635
“ Blue Black B [By] 712
“ “ BX [SS] 688
“ “ GGG [SS] 562
“ “ HW [SS] 563
“ Brilliant Orange 3R *[PL]* 513
“ Dark Brown G for Leather [A] 455
“ Deep Black E ext. [By] 721
“ Fast Brown GG [By] 540
“ “ Red F conc. [SS] 415
“ Gray B [I] 663
“ “ R [I] 667
“ Indigo Blue A [I] 649
“ “ “ BK [I] 692
“ “ “ BN [I] 650
“ Indone Blue R [S] 691
“ Orange G *[G]* 150
“ “ G [I] 1039
“ “ 2R [K] 150
“ Red C *[PL]* 412
“ Scarlet B conc. [K] 351

NO.
Direct Sky Blue conc. [SS] 616
“ Violet B conc. [SS] 324
“ “ RR conc. [SS] 379
“ Yellow G conc. [K] 253
“ Yellow 2G, 3G, [K] 935
“ “ R *[K]* 253
“ “ T [I] 154
Domingo Alizarine Blue G [L] 963
“ “ Brown G [L] 870
“ “ Claret [Bs] 789
Dominion Yellow O [At] 157
Double Ponceau 4R [By] 785
“ Scarlet ext. S [A] *[Lev]* 818
“ “ 2R *[t.M]* 818
Dyers' Mulberry 1148
“ Saffron 1147

Eboli Blue 3B [L] 632
“ “ 5B [L] 576
“ “ 6R [L] 666
Eclipse Violet R ext. [G] 1347
“ Yellow G ext. [G] 1445
“ “ 3G ext. [G] 1462
“ “ R ext. [G] 1446
Emerald Green crystals [B] 170
“ “ *[By]* 170
Emin Red [A] 398
Eosine *[F]* 1129
“ ext. [M] *[t.M]* *[Mo]* 1124, 1129, 1125
“ A [B] *[B]* 1129, 1125
“ B [B] 1121
“ B *[L]* 1114
“ 10B [C] 1112
“ B ext. *[Mo]* 1125, 1129
“ BN *[B]* 1114
“ DH *[DH]* 1125
“ 3J *[L]* *[Mo]* 1125, 1129
“ J ext. & 4J ext. *[L]* 1129
“ (blue) *[S]* 1112
“ Yellow *[A]* *[K]* 1125, 1129
“ water soluble *[M]* 1125, 1129
“ Y, YY and T [B] 1129
“ Scarlet B *[C]* 1114
“ “ BB ext. [M] 1114
Era Black J [Lev] 786
Erie Blue 2G [A] 657
Erika 2GN [A] 350
Eriocyanine A [G] 301
Erioglaucine A [G] 287
Erythrine X *[B]* 791
Erythrobenzin 139
Erythrosine (blue) [G] 1106
“ B [A] 1113
“ *[B]* *[DH]* *[F]* *[M]* *[t.M]* 1113
“ BB *[A]* 1107
“ D *[C]* 1113
“ J ext. *[Mo]* 1113
“ G [B] 1123
“ Y ext. [B] 1123
Ethyl Acid Violet S4B [B] 978
“ Green [A] 170
“ “ *[KB]* 222
“ Purple 6B [B] 221, 228
“ “ 5R [B] 138
“ Violet [B] *[G]* *[I]* 228
Euchrysine GG [B] 1086
“ R [B] 1075
Eureka B ext. [A] 390
Excelsior Lake Scarlet JN [C] 864

Fast Acid Blue B [By] 299
“ “ Eosine G [M] 1126

NO.
Fast Acid Grenat [*M*] 839
“ “ **Magenta G [M] 248**
“ “ **Phloxine A [M] 1120**
“ “ **Violet A2R [*M*] 1101**
“ “ “ **B [*M*] 237**
“ “ “ **10B [By] 306**
“ “ “ **BE [M] 236**
“ “ **Violet R [M] 240**
“ “ “ **RBE [M] 239**
“ “ “ **RGE [M] 242**
“ **Blue [*S*] 198**
“ “ **B, 6B, R, 3R, [*B*] [*C*] [*G*] [*O*] [*t. M*] ... 104**
“ “ **2B for Cotton [A] [*P*] [*S*] 33**
“ “ **6B for Wool [A] 104**
“ “ **B, Spirit Soluble 63**
“ “ **J powd. [B] 34**
“ “ **for Cotton R, 2R, 3R in cryst., [*A*] [*M*] 34**
“ “ **R cryst. [A] 34**
“ **Brown 3B [A] 820**
“ “ **N [*B*] 849**
“ **Chrome Blue DB [Bs] 880**
“ “ **Brown G [Bs] 879**
“ “ **Green [H] 1156**
“ “ “ **3G [K] 760**
“ **Cotton Blue B [*M*] 33**
“ “ “ **R [*O*] 61**
“ “ **Yellow T [K] 1084**
“ **Crimson WB [B] 244**
“ **Green [By] [*C*] 274, 177**
“ “ **ext. [*By*] 272**
“ “ **ext., bluish [By] 274, 272**
“ “ **CR powd. [By] 271**
“ “ **J [*Mo*] [*P*] 170**
“ “ **JJO [*I*] 170**
“ **Light Green [By] 274**
“ “ **Orange G [By] 896**
“ “ **Yellow G [By] 944**
“ “ “ **2G, 3G [By] 945**
“ **Marine Blue BM & GM [*K*] and G [*O*] ... 33**
“ **Mordant Blue R [M] 754**
“ **Navy Blue R [*O*] 34**
“ “ “ **RM, MM, [*K*] 34**
“ **Neutral Violet B powd. [C] 64**
“ **Pink BB [B] 802**
“ “ **for Silk [*DH*] 6**
“ **Ponceau [M] 839**
“ “ **B [M] 800**
“ **Printing Yellow R paste [By] 894**
“ **Red [*BK*] 778**
“ “ **[*F*] [*L*] [*t. M*] 777**
“ “ **A [A] [*B*] [*By*] [*K*] [*Lev*] [*O*] 777**
“ “ **B [B] 778**
“ “ **7B [*NJ*] 372**
“ “ **ext. [A] 771**
“ “ **C [*B*] 782**
“ “ **D ext. [B] 811**
“ “ **EB & SD [*B*] 811**
“ “ **NS [*By*] 811**
“ “ **O [*M*] 777**
“ “ **PR ext. [By] 803**
“ “ **R [B] 844**
“ **Scarlet B [K] 842**
“ “ **F [K] 805**
“ “ **5O [H] 825**
“ “ **P [B] 418**
“ **Yellow [*B*] [*By*] [*SB*] 918**
“ “ **[*t. M*] 899, 900**
“ “ **F [B] 928**
“ “ **G [K] [*DH*] 918**
“ “ **3GX [B] 522**
“ “ **greenish [*D*] 918**
“ “ **O [B] 902**

NO.
Fast Yellow S [*C*] 918
Fat Ponceau [M] 839
“ “ **M [*K*] 839**
Flavanthrene G [B] 1179
Flavazine 3GL [M] 939
“ **L & T [M] 948**
“ **RL [M] 929**
“ **S [M] 949**
Flavinduline O [B] 251
Flovophosphine G conc. New [M] 1052–1
“ **2G conc. New [M] 1071**
“ **4G conc. New [M] 1074**
“ **R conc. New [M] 1032**
Fluoresceïne [P] [*C*] [*DH*] [*L*] 1141
Fluorescent Blue [*I*] [*S*] 56
Formic Black TMKF [G] 722
“ **Blue B [G] 609**
“ “ **R [G] 684**
“ **Brown R [G] 374**
“ **Orange R [G] 1037**
“ **Red G [G] 1057**
Formyl Violet S4B pat. [C] 307
Fram Blue G [By] 102
Fuchsia [*I*] 2
Fuchsiacine 139
Fuchsine [*By*] [*C*] [*D*] [*K*] [*L*] [*DH*] [*M*] [*O*] [*etc.*] 139
“ **B [B] 139**
“ **76712 J [C] 139**
“ **S [B] 245**
“ **Ponceau 139**
“ **Scarlet 139**
“ **yellowish 139**
Fuscanthrene B [B] 1177
Fustic Crystals [AD] 1148
“ **Cut [AD] 1148**
“ **Extract B ext. [AD] 1069**
“ “ **Y [AD] 1145**

Gallamine Blue powd. [G] [*By*] 109
Galleine A paste [M] 1117
“ **paste [*B*] [*By*] [*DH*] 1117**
Gallocyanine powd. [By] 46
Galloflavine paste [B] 1139
Gallophenine P powd. [By] 110
Gambier 1135
Gambine B, R [H] 79
“ **Y [H] 920**
Gelbbeeren 1149
Gelbholz 1148
Gentianine [G] 25
Geranine G [By] 352
Geranium [*C*] 139
Giroflé [DH] 4
Gloria Black B [By] 570
“ “ **[B] 565**
Gold Orange (By) [*D*] 872, 898
“ **Yellow [*By*] 891**
Graphitol Red BB [O] 863
“ “ **8B [O] 814**
“ “ **R [O] 855**
Gray Direct B, J, [P] 69
Green Solution [*t. M*] 257
Grenadine [*O*] 139
Grenat pour Impression [P] 844
Gris Direct R [P] 1095
Guinea Bordeaux B [A] 769
“ **Carmine B [A] 808**
“ **Fast Green B [A] 262**
“ “ **Violet 10B [A] 304**
“ **Green B, B ext. [A] 259**
“ **Red 4R [A] 788**
“ **Violet 4B [A] 308**

NO.
Guinea Violet 6B [A] 303
" " S4B [A] 308
" " R [A] 226

Harmaline 139
Helianthine [G] 910
" [Synthesized] [B] 898
Helindon Red 3B [M] 126
Heliotrope B [K] 1
" 2B [K] 1
Helvetia Blue [G] 191, 292
Hessian Brown BB [L] 516
" " MM [L] 423
" Purple N [A] [L] [SB] [By] 1003
Hoechst New Blue [M] 291
Hofmann's Violet [KB] 243
" " BBB [B] 233
Hydrazine Yellow O [O] 948
" " SO [O] 949
Hypernic [AD] 1136

Immedial Black FF ext. pat. [C] 1274
" " G ext. pat. [C] 1264
" " NBB conc. pat. [C] 1362
" " NN conc. [C] 1387
" " NNG conc. pat. [C] 1379
" " NNR conc. [C] 1388
" " NNZ conc. [C] 1378
" " V ext. [C] 1280
" Blue C [C] 1285–1
" " CR ext. conc. pat. [C] 1329
" Bordeaux G conc. pat. [C] 1229
" Brilliant Black B [C] 1265
" " " 6BG conc. [C] 1373
" " " 8BG conc. [C] 1393
" " " 5BV conc. pat. [C] 1372
" " Carbon F pat. [C] 1381
" " " FG pat. [C] 1382
" " Green G ext. [C] 1256
" Brown B [C] 1232
" " B pat. [C] 1417
" " BR [C] 1394
" " RR pat. [C] 1219
" " W conc. pat. [C] 1218
" Carbon B [C] 1380
" " BL [C] 1353
" " JHJ [C] 1368
" " R [C] 1390
" Cutch BG pat. [C] 1396
" " BGG pat. [C] 1397
" " G pat. [C] 1447
" " O pat. [C] 1403
" " R [C] 1419
" Dark Brown D [C] 1475
" " Green B [C] 1242–1
" Deep Green G pat. [C] 1268
" Direct Blue B ext. conc. [C] 1318
" " " B ext. conc. pat. [C] 1330
" " " 4B ext. conc. pat. [C] 1331
" " " JB pat. [C] 1323
" " " OD pat. [C] 1328
" " " R pat. [C] 1317
" Green BB ext. pat. [C] 1254
" " BBX pat. [C] 1255
" " 2G ext. [C] 1257
" " GG ext. sol. [C] 1241
" " GGX pat. [C] 1258
" Indogene B conc. [C] 1337
" " GCK conc. pat. [C] 1286
" " GCL conc. pat. [C] 1287
" Indone B conc. [C] 1287
Immedial Indone 3B conc. pat. [C] 1276
" " BBF conc. [C] 1277
" " BF conc. [C] 1289
" " BN conc. [C] 1288
" " JBN conc. [C] 1282
" " RB conc. [C] 1322
" " R conc. pat. [C] 1319
" " RG [C] 1321
" " RR conc. pat. [C] 1320
" Maroon B conc. pat. [C] 1221
" New Blue G conc. pat. [C] 1279
" Olive B pat. [C] 1238
" " GG [C] 1235
" " 3G [C] 1234
Immedial Orange C pat. [C] 1421
" " C soluble [C] 1422
" Prune S [C] 1344
" Purple C pat. [C] 1216
" Sky Blue paste pat. [C] 1290
" " " powd. conc. [C] 1290
" Violet C [C] 1343
" Yellow GG [C] 1457
" " Brown EN [C] 1420
" " Olive G [C] 1458
Imperial Scarlet [By] 800
Indalizarine J [DH] 88
" R [DH] 88
Indanthrene Blue for Paper [B] 1189
" " CDS, GCD [B] 1188
" " RC, SC [B] 1190
" " RS [B] 1187
" " RRZ, RSP & RZ [B] 1189
" " S [B] 1187
" " Z, ZR [B] 1189
" Brown B [B] 1180
" Dark Blue B & B conc. [B] 1192
" " " BB conc. [B] 1191
" Gray B [B] 1195
" Green B [B] 1183
" Maroon R [B] 1177
" Olive G [B] 1182
" Violet R ext. [B] 1194
" " RT [B] 1193
" Yellow G [B] 1179
" " R [B] 1179
Indazine [C] 54
" M [C] 54
Indian Saffron 535
" Yellow [By] 910
" " FF [C] 909
" " G [By] 910
" " GR [By] 902
" " J [H] 483
" " R [C] 903
Indigen D & F [By] 63
" Black NS [Klp] 729
Indigo (Natural) 130
" B, R, J [B] 130
" MLB [M] 130
" Brominated R [B] 131
" " RB [B] 132
" Carmine [B] 94
" Extract A [B] 94
" Paste G [B] 129
Indigotine A [B] 94
Indisine 68
Indochromine T [S] 117
Indochromogen S [S] 92
Indocyanine B, BF, [A] 101
" 2R [A] 111
" B for Wool [A] 43
Indoïn Blue R [B] 53
" " R [By] 62

NO.
Indole Blue R [A] 61
Indophenol [C] 89
Induline B, 3B, 6B, R [*B*] [*By*] [*CR*] 104
" BAC [By] 121
" BE [P] 118
" 3B, 6B opal 63
" WLX [B] 72
" Scarlet [B] 12
" Soluble 104
" Spirit Soluble [*H*] [*B*] [*By*] 63
" " " 3B, 6B 63
Iodeosine B 1113
" G 1123
Irisamine G [C] [*B*] 1012
Iris Blue [B] 56
" Violet [B] 66
Isamine Blue 6B [C] 183
" " R [C] 186
Isoviolanthrene 1194

Janus Blue [*M*] 61
" " B [M] 27
" Black D [M] 40
" " No. 1 [M] 70
" " O [M] 58
" Brown B [M] 458
" " R [M] 481
" Claret Red B [M] 312
" Gray B [M] 59
" " BB [M] 60
" Green B & G [M] 26
" Red B [M] 363
" Yellow G [M] 1058
" " R [M] 1042
Japan Earth 1135
Jaune Acide [*DH*] 946
" d'Aniline 900
" G (Metanil ext.) [*MLy*] 902
" OS [P] 946
" Solide N [P] 899

Kaiser Yellow 897
Kambe Wood 15
Kanthosine J 1041
Katigene Black 2B [By] 1299
" " BFC ext. [By] 1356
" " 2R ext. [By] 1363
" " T ext. conc. [By] 1391
" " TG ext. [By] 1383
" " Brown B ext. conc. [By] 1233
" " " BW ext. conc. [By] 1413
" " " N [By] 1474
" Blue B [By] 1336
" Blue-Black B [By] 1371
" " " B ext. [By] 1339
" " " 4B [By] 1301
" " " G [By] 1308
" " " NB ext. [By] 1309
" " " R [By] 1301
" Brilliant Black B ext. [By] 1307
" " Green G [By] 1242
" Brown 2R [By] 1224
" " 4R [By] 1225
" " V ext. [By] 1220
" Catechu B [By] 1230
" Chrome Blue 5B [By] 1244
" " " 2R [By] 1300
" " " SG [By] 1250
" " Brown 5G [By] 1432
" Cutch B [By] 1231
" Dark Blue R ext. [By] 1326

NO.
Katigene Deep Black B [By] 1364
" Direct Blue B pat. [C] 1327
" Green BB [By] 1251
" " 4B [By] 1245
" " 2BX [By] 1252
" " 2G [By] 1253
" Indigo CL ext. [By] 1291
" " CLG ext. [By] 1333
" " G ext. [By] 1278
" " 2RL ext. [By] 1292
" " 5RL ext. [By] 1334
" " 4RO ext. [By] 1325
" Khaki G ext. [By] 1455
" Navy Blue R ext. [By] 1310
" Olive G [By] 1237
" Red Brown R [By] 1222
" " " 3R [By] 1223
" Violet B [By] 1345
" Yellow Brown GR ext. [By] 1404
" " " R [By] 1428
" " G [By] 1460
" " G ext. [By] 1459
" " GG ext. [By] 1459
Kermesin Orange [*L*] 857
Kiton Blue N [I] 85
" Green [I] 276
" " N [I] 267
" Red S [Klp] 794
" Violet 12B [I] 305
" Yellow G [I] 1146
Kreutzbeeren (*Ger*) 1149
Kryogene Black TB [B] 1365
" Blue R [B] 1338
" Direct Blue B [B] 1324
" " " G [B] 1275
" Olive B [B] 1269
" Yellow R [B] 1438

Lac Dye, powd. [AD] 775
Lake Scarlet 3R [C] 835
Lanafuchsine 6B [C] 762
" BBS [C] 803
" SB [C] 790
" SG [C] 794
Leather Brown [*M*] 1052–3
" " ext. [B] 1053
" Yellow [*D*] [*DH*] [*L*] [*M*] [*O*] 1052–3
Lemon Flavine [AD] 1150
Light Blue [*t. M*] [*P*] 217
" Green 2G [t.M] 256
" " SF, yellowish [B] 257
Lima Wood [AD] 1136
Logwood (Jamaica) [AD] 255
" Crystals [AD] 1047
" " Type C [AD] 1137
" " " DW [AD] 1137

Madder, Dutch [AD] 1130
Magdala Red [*DH*] 6
Magenta [*H*] [*Sch*] [*etc.*] 139
" DR [M] 139
Maize 166
Malachite Green [A] [*K*] [*M*] [*t. M*] 177
" " B [*B*] 177
" " G [*B*] 170
Malta Gray [*P*] 69
Manchester Yellow [*H*] [*Lev*] [*RD*] 945–1
Mandarin G ext. [A] 872
Marine Blue [*C*] 52
" " B [*I*] 200
Martius Yellow [*M*] 945–1

NO.
Mauve, Mauveïne ... 68
Melanthrene B paste [B] ... 1195
Meldola's Blue ... 34
Mercerine Wool Scarlet B [H] ... 827
“ “ “ 5B [H] ... 426
Meta Chrome Bordeaux B [A] ... 782
“ “ “ R [A] ... 850
“ “ Brown B paste [A] ... 817
“ “ Blue G 276 powd. [A] ... 1160
“ “ Olive Brown G [A] ... 868
“ “ Orange R Double [A] ... 893
“ “ Yellow 2R ext. [A] ... 523, 1062
Metamine Blue B, G, *[L]* ... 33
“ Brown conc. [SS] ... 492
Metanil Red 3B ext. [By] ... 418
“ Yellow *[A]* *[B]* *[By]* *[D]* *[DH]* *[G]* *[K]* *[O]* *[t. M]* *[F]* *[Fi]* *[S]* *[Sch]* ... 902
“ “ OO [K], R [H], ext. [A] ... 902
“ “ Y [H] ... 930
Metaphenylene Blue B [C] *[C]* ... 57, 28
“ “ BB [C] ... 28
Methyl Alkali Blue [O] *[B]* *[G]* *[K]* *[M]* ... 196
“ “ “ *[B]* *[DH]* *[G]* *[K]* *[LSch]* *[M]* *[O]* ... 282
“ Blue [K] ... 191
“ “ *[O]* *[C]* *[B]* *[M]* ... 191
“ “ for Cotton [O] *[I]* *[K]* *[M]* *[t. M]* . 292
“ “ for Silk MLB [M] ... 200
“ “ water soluble *[G]* ... 200
“ Eosine *[A]* ... 1114
“ Green *[A]* *[By]* *[P]* ... 222
“ “ cryst. [B] ... 222
“ “ 3IE, 4IE & 5IE [P] ... 182, 173
“ Orange ... 898
“ Violet B & 2B *[A]* *[B]* *[C]* *[F]* *[H]* *[M]* *[O]* ... 229
“ “ B [By], BB [M], 4BO [O], 75278I [C] ... 232
“ “ 5B [A] ... 227
“ “ 5B [By], 6B [B], 6B cryst. [M] 229
“ “ 4BO [C] ... 230
“ “ 3R ext. [B] ... 138
“ “ V_3 *[K]* ... 232
Methylene Blue B *[B]* ... 23
“ “ BB [By] [C] ... 23
“ “ BB conc., BB ext. & DBB [M] 23
“ “ BB in powd. ext. *[A]* *[B]* *[M]* . 23
“ “ in powd. ext. D *[A]* *[M]* ... 23
“ “ BG [SS] *[B]* ... 23
“ “ 4/B 3/E BT [SS] ... 23
“ “ O [B] ... 23
“ “ free from Zn [By] ... 29
“ Gray D, ND, NF *[M]* ... 69
“ Green B [By] ... 18
“ “ ext. yellow conc. [M] ... 18
“ Violet RRA powd. [M] ... 2
“ “ 3RA ext. [M] ... 3
Methylindone B [C] ... 30
Mikado Brown B [L] ... 457
“ “ 3GO & M *[L]* ... 457
“ Orange G to 4R *[L]* ... 150
Milling Orange [D] ... 885
“ Red 4BA [A] ... 853
“ “ 6BA [A] ... 812
“ “ E [SS] ... 844
“ “ G [C] ... 822
“ “ GA [A] ... 856
“ Scarlet 4R conc. [M] ... 787
“ “ 4RO *[Mo]* ... 787
“ Yellow GA [A] ... 250
“ “ O [C] ... 913
Mimosa M [M] ... 1081
“ *[G]* ... 1081

NO.
Mimosa Yellow pat. [G] ... 1081
Mono Chrome Brown AB [M] ... 907
“ “ Gray G [M] ... 1163
“ “ Green AG [M] ... 1156
“ “ Red G [M] ... 883
“ “ Yellow G [M] ... 941

Naphthalamine Rose *[DH]* ... 6
Naphthalene Acid Black 4B [By] ... 973
“ Red [Kahlbaum] ... 6
“ Green conc. [M] ... 261
Naphthalin Scarlet ... 6
Naphthamine Blue 2B [K] ... 614
“ “ 7B [K] ... 582
“ Brown GX [K] ... 439^1
“ Fast Blue B [K] ... 656
“ Indigo G [K] ... 564
“ Yellow NN conc. [K] ... 1066
Naphthazine Blue [M] *[D]* ... 113
Naphthindone *[C]* ... 61
“ BB [C] ... 53
Naphthogene Blue B [A] ... 624
“ Blue 2R [A] ... 348
“ “ 6R [A] ... 693
Naphthol Blue Black [C] ... 956
“ “ “ BN [C] ... 561
“ “ “ S [C] ... 957
“ Blue G [C] ... 959
“ Dark Green G [C] ... 952
“ Green B [C] *[MLy]* ... 951
“ Orange *[A]* ... 847
β-Naphthol Orange ... 872
Naphthol Red O *[t. M]* ... 811
“ “ S [By] ... 811
“ Yellow *[SB]* ... 945–1
“ “ S [C], *[B]* *[By]* *[DH]* *[F]* *[H]* *[I]* *[Lev]* *[O]* *[S]* ... 946
Naphthyl Blue Black N [C] ... 597
Naphthylamine Black 6B [By] ... 700
“ “ 10B [By] ... 958
“ Brown [B] ... 849
Naphthylene Blue R in cryst. *[By]* ... 34
Neptune Blue BG [B] ... 178
“ Green SB [B] ... 268
“ “ SG [B] ... 264
Nerol B ext. [A] ... 519
“ 2B, 4B, 2BG, 4BG, *[A]* ... 519
Neutral Blue [C] ... 65
“ “ R [M] ... 195
“ Gray G [A] ... 638
“ Red *[C]* *[DH]* ... 11
“ “ ext. [C] ... 11
“ Violet O [M] ... 225
“ Wool Black B, G, [C] ... 724
New Acid Green 3BX [By] ... 269
“ “ “ GX [By] ... 260
“ Blue G *[t. M]* ... 33
“ “ D110 [C], R [C], R [t.M], R *[By]* *[C]* *[D]* *[I]*, R ext. [By], R125 [C] ... 34
“ Coccine [A] [Lev] *[M]* *[RF]* ... 826
“ Cotton Fast Blue *[I]* ... 34
“ Fast Green BB, 3B *[I]* ... 17, 175
“ “ Yellow R [B] ... 912
“ Gray *[By]* ... 69
“ Green *[By]* ... 177
“ Methylene Blue F [By] ... 39
“ “ “ FR [By] ... 39
“ “ “ GG [C] ... 37
“ “ “ N [C] ... 22
“ “ “ NX [C] ... 52
“ “ Gray *[M]* ... 69
“ Patent Blue B [By] ... 277

NO.
New Patent Blue 4B [*By*] ... 277
" " " GA [By] ... 277
" Phosphine G [C] ... 1070
" Pink ... 1107
" Red L [*K*] ... 800
" Scarlet 5G [By] ... 842
" Victoria Blue B [By] ... 210
" " " GG [Klp] ... 219
" " " R [*By*] ... 208
" " Green [*B*] ... 177
" Yellow [*By*] ... 900
" " ext. conc. [By] ... 878
" " L [*K*] ... 918
Nicaragua Wood ... 1136
Nicholson Blue [*S*] ... 198
" " No. 3 [B] ... 213
Night Blue [I]. [*B*] [*S*] ... 197
" Green A [t.M] ... 270
" " A ext. conc. [t.M] ... 172
Nigrisine [*P*] ... 69
Nigrophor A [B] ... 770
Nigrosine BL powd. [B] ... 122
" Crystals 144 [K] ... 120
" G [By] ... 115
" Spirit N [B] ... 124
Nile Blue A [B] ... 35
" " 2B [B] ... 36
" " BN [Cont.] ... 20
α-Nitroalizarine [*M*] ... 1143
Nitrosamine Red [B] (developed on cotton) ... 1025
" " " (direct dyeing on wool) ... 1044
Noir Autogen [P] ... 1392
" Naphthol 12B [*MLy*] ... 956
Nopalin [*t.M*] ... 1114

Oil Blue [M] ... 955
Old Fustic ... 1148
" Scarlet [*By*] ... 800
Omega Chrome Black PB [S] ... 759
One Dip Cardinal [K] ... 810
" " Yellow AC [K] ... 521
Opal Blue [*BrS*] [*C*] ... 217
Opaline Scarlet RS [I] ... 1009
Orange [*t.M*] ... 875
" I [M] [*By*] [*DH*] [*K*] [*t.M*] ... 871–1
" II [*B*] [*DH*] [*F*] [*I*] [*K*] [*Lev*] [*M*] [*t.M*] [*O*] ... 872
" No. 2 [*P*] ... 872
" III [*DH*] [*t.M*] [*P*] [*RF*] ... 898
" No. 3 [*P*] ... 898
" IV [*B*] [*DH*] [*F*] [*G*] [*K*] [*H*] [*M*] [*t.M*] [*SB*] [*Sch*] ... 900
" IV [*B*] [*M*] [*P*] [*t.M*] ... 878
" No. 4 [*P*] ... 901
" A [*L*] ... 872
" A ext. [B] ... 872
" B [*L*] ... 871-1
" BG [B] ... 469
" ENL [*C*], GRX [*B*] ... 877
" ext. [C] ... 872
" FNZ [C] ... 875
" G [*H*], G [*CJ*] ... 872, 890
" GT [*By*], N [*K*], R [*H*], RN [*C*] ... 875
" N [*B*] [*I*] ... 900
" R [C] [*DH*] [*I*] [*t.M*] ... 898
" R [By] ... 873
" R ext. [*Mo*] ... 871–1
" T [P] ... 866
" T [*K*] ... 857
" soluble in fat [*PL*] ... 890
" Y [M] ... 872
" Flavine [AD] ... 1150
" Yellow ext. [Fritzsche] ... 871–1

NO.
Orchil ... 73
Orellana ... 1054
Oriol Yellow [G] ... 1066
Orlean ... 1054
Orleana ... 1054
Orseille ... 73
" Red [B], obsolete ... 320
Ortho Cyanine 6G [A] ... 954
Oxamine Black A [B] ... 583
" Blue B [B] ... 603
" " 3B [B] ... 574
" " BG [B] ... 594
" " 3R [B] ... 687
" Brown B [B] ... 331
" " 3G [B] ... 473
" " GR [B] ... 434
" Claret B [B] ... 1006
" Green B [B] ... 553
" " G [B] ... 547
" Maroon [B] ... 413
" Red [B] ... 414
" " 3B [B] ... 380
" Violet [B] ... 325
Oxychlorazol Blue B [H] ... 192
" " 6B [H] ... 179
Oxydiamine Black V1 ext. conc. [C] ... 706
" Blue G [C] ... 680
" Brown RN [C] ... 496
" Violet B [C] ... 328
" " BF [C] ... 334
" " R [C] ... 327
" Yellow GG [C] ... 1082
Oxydiaminogene OB [C] ... 720
" OT [C] ... 714
Oxydianil Yellow OO [M] ... 1066
Oxyphenine [Cl Co] ... 165, 155, 158
" Gold [*Cl Co*] ... 165

Palatine Black [*B*] ... 598
" " 4B [B] ... 726
" Chrome Black B [B] ... 776
" " " F [B] ... 636
" " Brown G [B] ... 749
" " " R [B] ... 764
" " " WR [PK] ... 882
" " Red B [B] ... 867
" " " R [B] ... 385
" Red A [B] ... 803
" Scarlet R [B] ... 830
" " 3R [B] ... 821
Para Blue G [By] ... 617
" " R [By] ... 645
" Brown G [By] ... 507
" Diamine Black B ext. conc. [C] ... 711
" " " BB conc. [C] ... 701
" Fuchsine, [K] ... 140
" Magenta ... 140
" Phosphine G [C] ... 1050
" " GG [C] ... 1071
" Red ... 1025
Patent Blue [M] ... 277
" " A [M] ... 278, 82
" " JI [M] ... 283
" " L, LL [M] ... 286
" " V [M] ... 277
" " Superfine, conc. [*M*] ... 277
" Phosphine [*I*] ... 1052–3
Peach Wood ... 1136
Pegu Brown G [L] ... 490
Pernambuco Wood ... 1136
Peri Wool Blue B [C] ... 983
Persian Berry Extract [G] ... 1149

	NO.
Phenocyanine TV [DH]	106
" VS [DH]	31
Phenoflavine [O]	943
Perkin's Violet	68
Phenamine Blue B [B]	670
Phenyl Blue Black N [By]	600
Phenylamine Black 4B, T, [By]	969
Philadelphia Yellow G, 2G, 3R, [A]	1053
Phloxine [B] [*C*] [*DH*] [*F*] [*M*]	1107
" ext. [B]	1116
" GA ext. [M]	1115
" free from iodine [*B*]	1112
" P [B]	1107
" TA [*Mo*]	1112
Phosphine [B] [*C*] [*H*] [*K*] [*O*] [*SB*] [*etc.*]	1052–3
" ext. [B]	1073
" P [M]	1052–3
Picric Acid	947
Pluto Black A ext. [By]	655
" " B [By]	728
" " 3B ext. [By]	735
" " CR [By]	695
" " G [By]	996
" " R [By]	730
" " TG ext. [By]	719
" Brown R [By]	359
" Orange G [By]	1040
Polychromine [*G*]	1087
Ponceau B ext. [*M*]	800
" G [*Lev*] [*M*]	834
" 2G [M] [*A*] [*B*] [*BK*]	875
" GR [*M*]	834
" F2R [C]	833
" HP [By]	836
" J [*Ly*] [*M*]	834
" R [*A*] [*M*]	834
" 2R [A] [*B*] [*Lev*] [*M*] [*P*] [*S*]	834
" 3R [A]	833
" 5R [M]	791
" 6R [B] [*M*]	846
" 3RB [A] [*A*]	838, 800
" 3RB ext. [A]	838
" 4RB [A]	841
" 6RB [*A*]	802
" 10RB [A]	798
" Brilliant 4R [*M Ly*]	826
Pourpre Français	73
Primrose	945–1
Primula R	243
Primuline [B] [*BSS*] [*By*] [*C*] [*ClCo*] [*K*]	1087
" A [B]	1087
Printing Black for Wool [B]	977
" Blue [*A*] [*C*] [*M*]	63
Pure Blue BSI [*I*]	292
" Soluble Blue [C]	190
Purpurine Paste [B] [*BACo*] [*By*]	819
Pykotanium Coeruleum [*Merck*]	232
Pyramine Orange 3G [B]	510
" " R [B]	456
" " Y [B]	1048
" Yellow R [B]	539
Pyrogene Blue R [I]	1384
" Brown G [I]	1405
" Dark Green B [I]	1249
" Direct Blue RS [I]	1340
" Green 3G [I]	1240
" Indigo [Klp]	1281
" " R [I]	1297
" Orange O [I]	1448
Pyrol Blue BB [L]	1270
" " R conc. [L]	1293
" " RR conc. [L]	1298
" Brown G ext. [L]	1426
Pyrol Brown R conc. [L]	1399
" Green 3G [L]	1239
" " 4G [L]	1236
" Yellow G [L]	1465
Pyronine B [L] [*SB*] [*By*]	137
" G [L] [*SB*], [*By*]	136
Pyrosine B [*Mo*]	1113
" J [*Mo*]	1123
Pyrotine Orange [*D*]	877
Quercitron Bark ext. [AD]	1138
Quinaldine Yellow G [I]	1146
Quinoline Yellow [B]	1144
" " [*B*] [*By*] [*M*] [*S*]	1146
" " water sol. [A]	1144
Red B [*B*] [*Fl*]	1026
" B ext. conc., fat soluble [*F*]	839
" GG fat soluble [*F*]	1026
" Sanders [AD]	14
" Violet 5RS [B]	246
Renol Black G conc. [t.M]	738
" " 2G conc. [t.M]	739
" " R conc. [t.M]	740
" " RG [t.M]	732
" Bordeaux [t.M]	1005
" Brown MB conc. [t.M]	345
" " RG conc. [t.M]	1035
" Orange G [t.M]	1029
" Violet [t.M]	319
Resist Gray G [M]	1163
" Yellow C ext. [M]	526
Resoflavine [B]	1083
Resophenine 10B [Cl Co]	355
Resorcine Blue [*KS*]	56
" Brown [A] [*H*]	451
" Yellow [A] [*K*] [*F*] [*H*]	890
Rheonine [B]	1052
" GD [B]	1075
" GX [B]	1071
" R [PK]	1052
" Y [B]	1076
Rhine Blue	95
Rhodamine B [C] [*I*]	1001
" B ext. [B] [*I*] [*M*]	1001
" 3B [B]	1002
" G ext. [B] [*I*]	1001
" 4G [By]	999
" 6G, 6G ext. [B]	1011
" O [*M*]	1001
" S [B] [By] [*I*]	143
" Scarlet G [By]	144
Rhodin 3G [*BCF*]	1012
Rhoduline Blue GG ext. [By]	55
" " R [By]	62
" Heliotrope 3B [By]	67
" Orange N & NO [By]	1051
" Red B [By]	5
" " G [*By*]	5
" Sky Blue BB [By]	38
" Violet [By]	5
" Yellow 6G [By]	1084
Rocelline [*A*] [*C*] [*DH*] [*G*] [*I*] [*Mo*] [*P*] [*t.M*]	777
Rosanthrene O [I]	448
" R [I]	427
" Rose [I]	444
" Violet [I]	442
Rosazine paste [P]	71
Rosazurine G [By] [*L*]	1014
Rose Bengal [B] [*F*]	1109
" " [*B*] [*C*] [*KS*]	1103

NO.
Rose Bengal ext. [B] 1109
“ “ AT [*A*] [*B*] 1109
“ “ 3B [M] [*DH*] 1103
“ “ G [M] 1109
“ “ NT pure [*Mo*] 1109
“ **Magdala** [*DH*] 6
Rosinduline 2B bluish [*K*] 75
“ G [K] 74
“ 2G [K] 78
Rosolan [P] 68
Rosolic Acid 249
Rouge I [*MLy*] 777
“ d’Induline [P] 75
“ Rubis A [*MLy*] 783
Rubiante 139
Rubine [A] 139
“ S [*A*] 245
Rufanthrene B [*B*] 1180
Russian Green [*L*] 1131
Russian Red 139

Safflor, (*Ger*) 1147
Safflower 1147
St. Denis Black [P] 1267
St. Martha Wood 1136
Saffron (Italian) 1065
Saffrosine [*I*] 1114
Safraniline [G] 1001
Safranine [G] [*DH*] [*Sch*] 8
“ conc. [*M*], ext. conc. [*K*] 8
“ AY, NY & T [B] 8
“ ext. G [*A*] 8
“ FF ext. [By], Superfine Yellow Shade ext. [By] 8
“ SP, 2127NI, S150 [C] 8
“ G ext., GGS, S [*C*] 8
“ Prima [*H*] 8
“ AG ext., OOF ext. bluish [*K*] 8
“ MOOO [O] 8
Salicine Brown RC [K] 459
Santal Wood 14
Sapan Wood 1136
Saunder’s Wood 14
Scarlet G [*CJ*] 1026
“ J, JJ, V, [*Mo*] 1114
“ EC [C] 800, 838
“ F3R [C] 835
“ OOO [*H*] 824
“ OOOOO [*H*] 826
“ R & 2R [M] 862
“ 2R [*H*] 834
“ 3R [*By*] 818
“ 4R [M] 832
“ 6R [M] 815
Setocyanine G 180
Setoglaucine [G] 175
Solferino 139
Solid Blue 7 [K] 41
“ Green O cryst 177
“ “ “ paste [M] 1131
Soluble Blue [BSS] 294
“ “ F3B [B] 189
“ “ SB [B] 203
Sorbine Red [PK] 794
“ “ G [B] 831
Spirit Blue [*B*] [*By*] [*BrS*] [*D*] [*H*] [*L*] 217
“ Yellow [*K*] [*CR*] 932
Stanley Red [*Cl Co*] 400, 419
Stilbene Yellow 6G [Cl Co] 16
Substantive Red No. 2 [PK] 1020
Sudan I [A] 887
“ II [A] 1026
Sudan G [A] 536
“ Red 6
Sulfamine Brown B [D] 871
Sulphine [*B*] 1087
Sulphon Acid Blue G [By] 972
“ “ “ R [By] 966
“ Azurine [By] 565
“ Black A ext. [A] 1385
“ “ G [By] 596
“ “ R [By] 992
“ Cyanine G [By] 970
“ “ 5R ext. [By] 981
“ “ Black 2B [By] 620
“ Dark Brown [By] 349
“ Green GG [SS] 256
“ Orange G [By] 874
“ Yellow GG [SS] 1066
“ “ 5G [By] 940
“ “ R [By] 948
Sulphur Black 2B ext. [A] 1386
“ “ T ext. [A] 1369
“ Blue L ext. [A] 1311
“ Brown G [A] 1439
“ “ 2G [A] 1439
“ Catechu G [A] 1409
“ “ R [A] 1395
“ Corinth B [A] 1226
“ Indigo B [A] 1302
“ “ BA ext. [A] 1303
“ Yellow G ext. [A] 1464
“ “ R ext. [A] 1436
“ “ S [*K*] 946
Sun Yellow [*A*] [*G*] [*L*] [*S*] 166
“ “ GG conc. [SS] 166
“ “ RR conc. [SS] 160

Tannin Heliotrope B [*K*] 1
“ Orange R [C] 508
Tartrazine [S] [*B*] [*H*] [*I*] [*BCF*] 948
Terra Cotta FS [G] 440
Terre de la Nouvelle-Orléans 1054
Tetracyanole A [C] 82
“ SF [C] 286
“ V [C] 286
Thiazine Brown G, R, [B] 447
“ Red R [B] 353
Thiazol Yellow G, R, [By] 1081
“ “ 3G [By] 1088
“ “ GL [By] 1068
Thiocarmine R [C] 93
Thiocatechine [P] 1407
“ No. 1 [SS] 1408
“ 2 [P] 1435
“ No. 3 [SS] 1471
Thiochromogene [*D*] 1087
Thioflavine S [C] 1077
“ T [C] 1084
Thiogene Black 4B liquid [M] 1358
“ “ 6BV liquid [M] 1314
“ “ M liquid [M] 1352
“ Blue B [M] 1315
“ “ R [M] 1335
“ “ 2R [M] 1316
“ Bronze G [M] 1452
“ Brown G [M] 1414
“ “ GC [M] 1424
“ “ GR [M] 1360
“ “ G2R [M] 1400
“ “ 2R [M] 1416
“ “ S [M] 1472
“ Catechu R [M] 1228
“ Cyanine G [M] 1273, 1283

NO.
Thiogene Cyanine O [M] 1284
“ Dark Blue B [M] 1305
“ “ “ BTL [M] 1306
“ “ Red G [M] 1227
“ “ “ R [M] 1217
“ Gold-Brown OG conc. [M] 1412
“ Gold Yellow A conc. [M] 1456
“ Green B [M] 1261
“ “ BL ext. [M] 1259
“ “ G [M] 1246
“ “ 2G [M] 1247
“ “ GL ext. [M] 1260
“ Heliotrope O [M] 1350
“ Khaki O [M] 1434
“ Marine Blue R conc. [M] 1304
“ Orange GR [M] 1449
“ “ R [M] 1425
“ “ 2R [M] 1450
“ Rubine O [M] 1215
“ Violet V [M] 1346
“ Yellow G [M] 1441
“ “ 2G [M] 1466
Thioindigo Red B paste [K] 125
“ Scarlet [K] 127
Thion Black TC [K] 1341
“ “ TR [K] 1342
“ Blue-Black B [K] 1313
“ Brown G [K] 1430
“ “ O conc. [K] 1451
“ “ R conc. [K] 1427
“ “ 3R [K] 1398
“ Green 2G [K] 1248
Thionine Blue G ext. [M] 24
“ “ O ext. [*M*] 24
Thionol Black A conc. [SS] 1366
“ Blue 2B [Lev] 1312
“ “ BW [Lev] 1294
“ Brilliant Green 3G [Lev] 1263
“ Brown B [Lev] 1423
“ “ O [Lev] 1453
“ “ R [Lev] 1410
“ “ Yellow Shade OG conc. [M] ... 1411
“ Dark Green [Lev] 1271
“ “ Purple [Lev] 1351
“ Green 2B [Lev] 1262
“ “ 3B [Lev] 1272
“ Yellow G [Lev] 1467
“ “ R [Lev] 1468
Thioxine Brown BBG [O] 1454
“ “ G [O] 1431
“ “ GR [O] 1415
“ Dark Blue B [O] 1296
“ Indigo [O] 1295
“ Yellow G [O] 1469
Titan Blue BBB [H] 611
“ Como G [H] 179
“ “ S [H] 192
“ Fast Black B [H] 708
“ “ “ G [H] 707
“ “ “ R [H] 704
“ Navy B [H] 618
“ Pink [H] 358
“ Scarlet C [H] 400
Tolan Red B, G, [K] 765
Toluidine Blue B [B] 21
“ “ O [M] [*A*] [*B*] 42
Toluylene Bordeaux B [O] 393
“ Brown [*By*] 497
“ “ G [O] 506
“ “ R [O] 497
“ Fast Orange GL [By] 529
“ Orange G conc. [SS] 1039
“ “ G [A] [*O*] [*By*] 1041

NO.
Toluylene Orange R conc. [SS] 1043
“ “ RR [O] 1036
“ Red [O] 368, 11
“ Yellow [O] 537
“ “ G [*By*] 538
Triazol Brown GOO [O] 493
“ Pure Blue R [O] 637
Thiophenol Black T ext. [Klp] 1361
Trisulphon Blue R conc. [S] 674
“ Brown B [S] 517
“ “ G, GG [*S*] 517
“ “ GG [S] 1038
Trona Red 3B [By] 403
“ “ GG [*By*] 429
Tropæoline O [*C*] 891
“ OO [*C*] 900
“ OOO No. 1 847
“ OOO No. 2 872
“ D 898
“ G [C] 902
Turmeric Root [AD] 535
Turmerine [*BSS*] 1081
Turquoise Blue BB [By] 181
“ “ G [By] 174
Typophor Blue [B] 204

Urania Blue [D] 99
Uranine [B] [M] [*A*] [*L*] [*F*] [*t.M*] [*S*] 1141
“ N [M] 1141
Union Black E ext. [B] 725
“ Fast Claret [Lev] 320
“ Navy Blue B [H] 602
“ Violet B [H] 238
Vac Blue [*H*] 61
Varnish Black B [B] 123
Victoria Blue [B] 218
“ “ B [B] [*I*] [*S*] 201
“ “ BS Spirit sol. [B] [*I*] 201
“ “ R [B] [*I*] 208
“ “ 4R [B] [*I*] [*S*] 223
“ “ RS conc. [SS] 220
“ “ Night [B] 202
“ Green 3B [B] 17
“ “ cryst. [B] 171
“ Pure Blue B [B] 206
“ Rubine [*BK*] [*M*] 811
“ Scarlet R [M] 873
“ “ 3R [M] 826
“ Yellow O double conc. [*M*] 902
Vidal Black [P] 1266
Violamine B [M] 237
“ G [M] 998
“ R [M] 1101
Violanthrene CD paste [B] 1193
Violeïne 68
Violet 3B ext. [*M*] 232
“ 4RN [I], RR and 5R [*Mo*] 243
“ de Paris [*P*] 232
“ Moderne [*DH*] 45
Viridanthrene B paste [*B*] 1183

Water Blue [C] 212
“ “ [*B*] [*By*] [*t.M*] [*G*] [*L*] [*M*] [*S*] [*Sch*] [*O*] [*etc.*] 294
“ “ 5B [A] 290
“ “ 6B [*A*] [*I*] 294
Wool Black [*A*] 598
“ “ 6B [A] 598
“ “ 4BF [A] 599

NO.
Wool Blue [H] 292
" " 2BX, RX [A] 298
" " N ext., SR [By] 288
" Fast Blue BL, GL, [By] 98
" Gray G [M] 97
" " B, R, [M] 97
" Green BS [By] 279
" " S [B] [I] [S] 279
" " SO [B] 84
" Red B [C] 806
" " ext. [K] 811
" Yellow [B] 891

Xanthine [DH] [O] [P] [L] 1052–3
XL Carmoisine 6B [H] 772
" Eosine 5B [H] 793
" Soluble Blue [BSS] 191
Xylene Blue AS, VS, AS conc., VS conc., [S]. 83
" " BS conc. [SS] 90

NO.
Xylene Red B [S] 1105
Xylidine Scarlet [M] 834

Yellow Berries 1149
" Brazil Wood 1148
" Brown Katigene 5G ext. [By] 1433
" Coralline [Kahlbaum], [Gr] [Lo] [Mo] [LP] [RD] 249
" Wood 1148

Zambesi Black B [A] 733
" " D [A] 709
" " F [A] 669
" " 2G [A] 731
" " V [A] 737
" Blue BX, RX, [A] 679
" Brown 4R [A] 1034
" Pure Blue 4B [A] 347
" " " R [A] 347

COUNTWAY LIBRARY
HC 33BG J